

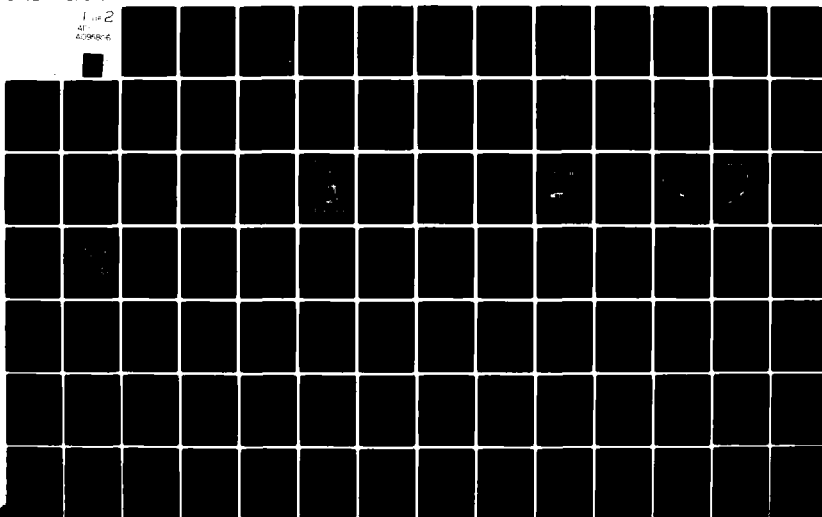
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OPERATING BASE LOCATIONS:  
MILFORD**

**Prepared for**

**United States Air Force  
Ballistic Missile Office  
Norton Air Force Base  
California**

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Santa Barbara, California**

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## **1.0 MILFORD AND VICINITY COMMUNITY ENVIRONMENT**

The area of analysis (AOA) for the Milford operating base location includes Beaver County. The AOA is located in the eastern section of the designated region of influence, as shown in Figure 1.0-1

### **1.1 HUMAN ENVIRONMENT**

#### **ECONOMIC ACTIVITY (1.1.1)**

##### **Employment**

Tables 1.1.1-1 and 1.1.1-2 highlight detailed employment characteristics of Beaver County. The former table indicates the relative dependence on only two sectors: government, comprising 20 percent of total employment in 1977; and agriculture, the source of 18 percent of 1977 county employment. The mining, construction, and manufacturing employment shares were well below the state and national averages in 1977. The employment share for the services sector was not shown to avoid disclosure of confidential data.

Table 1.1.1-2 presents 10-year employment growth figures and indicates Beaver County has grown very little; employment increased by only 100 jobs between 1967 and 1977. Disclosure rules prevent complete analysis, however available data shows that the government sector kept pace with the average annual growth of both the state and national government sectors. Agriculture in Beaver County posted an average annual decline of almost one percent between 1967 and 1977, similar to the declining agricultural employment trend in Utah and the nation.

##### **Income and Earnings**

Consistent with a constant employment level, total earnings exhibited very little growth over the 1967-1977 period. Table 1.1.1-3 highlights Beaver County earnings by industrial sectors relative to other counties in Utah (adjusted for inflation by using 1977 dollars). It indicates that the county's 1977 total earning of \$13.9 million were only one-fifth of one percent of the state's total. Further, the county growth rate was less than one-eighth that of Utah and one-fifth that of the U.S. over the 1967-1977 period. Disaggregating earnings by industry, the same pattern of negligible growth is observed (where data are available) except in the government sector, where earnings growth exceeded the state annual average and kept pace with the national rate.

Table 1.1.1-4 highlights per capita income and earnings shares by major industry in Beaver County. The county's 1977 per capita income of \$5,114 was roughly 86 percent that of Utah's, and 73 percent of U.S. per capita income. By industrial source, government had one-fifth of Beaver County's total 1977 earnings, corresponding to what employment in this industry would have indicated. Construction and mining earnings shares in 1977 were well above, and agriculture's share well below, what employment in those industries would have suggested, respectively, however it is characteristic for construction workers and miners to earn relatively higher wages than agricultural workers. Beaver County earnings shares in the manufacturing and services sectors were well below half both the state and national shares for those industries in 1977, reflecting the unimportance of these sectors with respect to the county's economy.

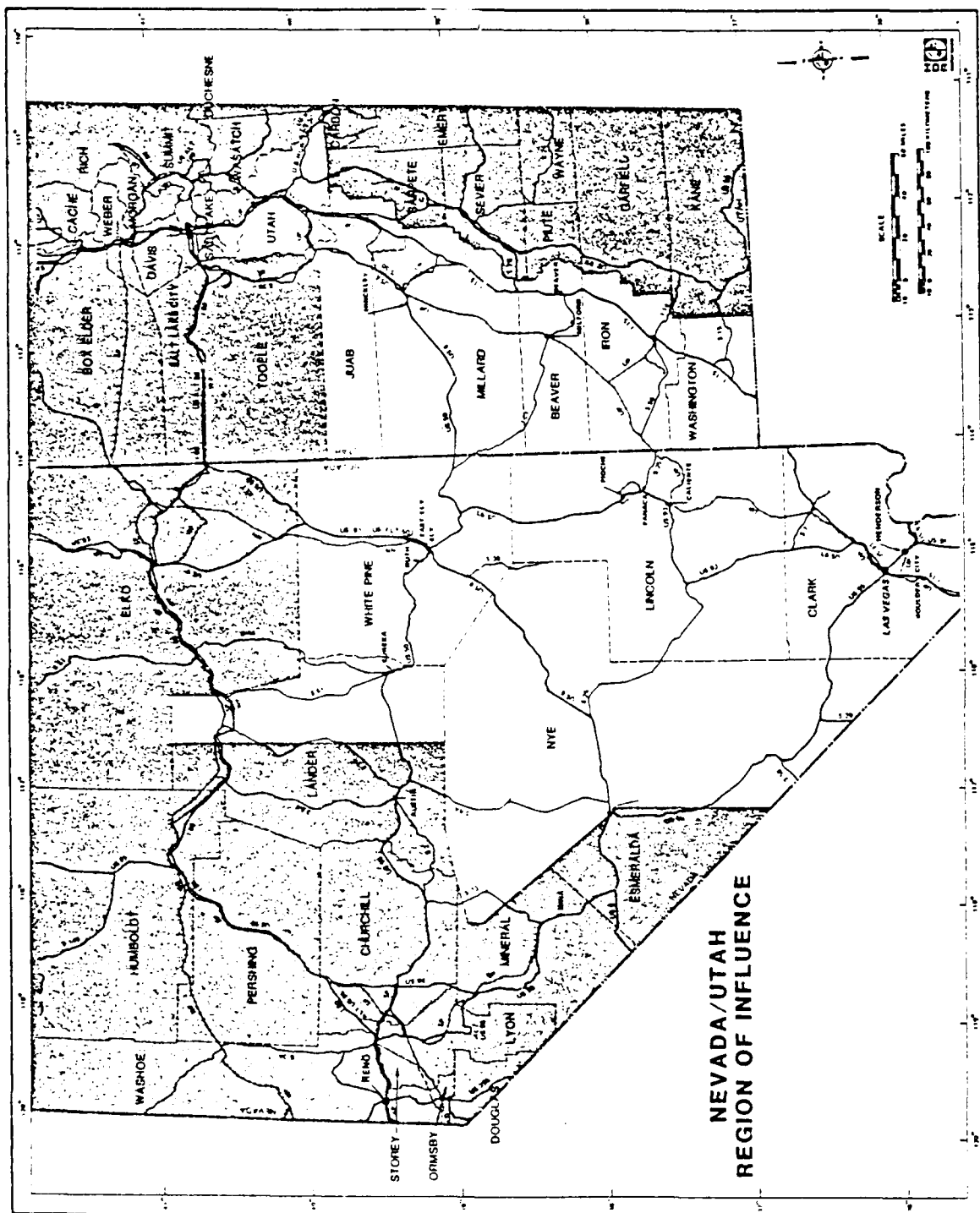


Figure 1.0-1. Location of the Milford OB in the Nevada/Utah region of influence (ROI).

Table 1.1.1-1. Total employment and percent share by major economic sectors for selected counties in Utah, 1977.

COUNTY	TOTAL EMPLOYMENT 1977	PERCENT OF TOTAL STATE EMPLOYMENT	AGRICULTURE SHARE (%)	MINING SHARE (%)	CONSTRUCTION SHARE (%)	MANUFACTURE SHARE (%)	SERVICES SHARE (%)	GOVERNMENT SHARE (%)
Beaver	1,726	0.3	18.2	1.3	2.6	8.6	(D)	20.4
Davis	50,061	9.1	2.2	0.1	4.6	9.3	9.2	51.1
Iron	6,517	1.2	9.4	3.9	5.0	6.2	9.8	26.7
Juab	2,150	0.4	13.2	(D)	(D)	25.8	7.3	20.7
Millard	3,416	0.6	30.9	1.8	1.2	6.8	6.4	21.4
Salt Lake	272,043	49.4	0.5	2.3	5.9	13.9	16.8	17.3
Tooele	10,959	2.0	3.1	0.6	10.0	9.7	4.5	57.1
Utah	59,393	10.8	4.6	7.0	6.1	20.0	20.6	16.6
Washington	6,365	1.2	6.9	0.4	7.0	7.9	11.9	21.4
Weber	49,011	8.9	2.3	0.1	4.8	11.4	14.5	30.2
Utah State Total	550,214		3.7	2.7	5.8	13.5	14.7	23.2
U.S.	97,898,874		4.2	4.2	4.0	20.1	17.4	18.2

060

(D) Not shown to avoid disclosure of confidential data.

Source: Bureau of Economic Analysis, April 1979.

Table 1.1.1-2. Employment growth by sector, selected counties in Utah, 1967-1977.

COUNTY	TOTAL			AGRICULTURE		MINING		CONSTRUCTION		MANUFACTURING		SERVICES		GOVERNMENT							
	1967	1977	Δ <sup>1</sup>	1967	1977	Δ	1967	1977	Δ	1967	1977	Δ	1967	1977	Δ						
Beaver	1,625	1,726	0.6	340	312	-0.9	(D) <sup>2</sup>	23	(D)	45	(D)	149	(D)	129	281	352	2.3				
Davis	40,034	50,061	2.3	1,231	1,084	-1.3	49	14	-11.8	710	2,323	12.6	3,122	4,662	4.1	2,044	4,626	8.5	26,429	26,560	-0.6
Iron	4,499	6,517	3.8	671	610	-0.9	244	255	0.4	176	327	6.4	270	405	4.1	393	637	4.9	1,154	1,743	4.2
Juab	2,116	2,150	0.2	343	284	-1.9	198	(D)	(D)	(D)	(D)	436	554	2.4	97	158	5.0	482	445	-0.8	
Millard	2,944	3,416	1.5	1,073	1,055	-0.2	(D)	62	(D)	52	42	-2.1	61	232	14.3	204	217	0.6	688	732	0.6
Salt Lake	180,651	772,043	4.2	1,604	1,443	-1.1	5,418	6,263	1.5	7,148	16,143	8.5	25,832	37,812	3.9	28,459	45,692	4.8	29,853	47,145	4.7
Tooele	11,514	10,959	-0.5	347	341	-0.2	136	70	-6.4	195	1,094	18.8	554	1,066	6.8	335	495	4.0	8,599	6,254	-3.1
Utah	37,804	59,393	4.6	3,192	2,708	-1.6	225	417	6.4	1,543	3,620	8.9	8,317	11,899	3.6	7,163	12,231	5.5	6,570	9,883	4.2
Washington	3,950	6,365	4.9	579	442	-2.7	(D)	28	(D)	195	444	8.6	127	503	10.4	460	757	5.1	961	1,365	3.6
Weber	44,667	49,011	0.9	1,335	1,147	-1.5	17	49	11.2	1,523	2,344	4.4	4,855	5,590	1.4	5,526	7,111	2.6	14,866	14,805	-0.1
State Total	391,289	550,214	3.5	23,091	20,244	-1.3	10,330	14,825	3.7	13,676	31,814	8.8	50,216	73,997	4.0	49,981	80,646	4.9	104,014	127,463	2.1
U.S. Total (in millions)	82.5	97.8	1.7	4.6	4.2	-1.2	.6	.8	3.0	3.3	3.9	1.6	19.5	19.7	0.1	12.7	17.0	3.0	13.9	17.8	2.5

<sup>1</sup> $\Delta$  = average annual growth rate.

<sup>2</sup>(D) = not shown to avoid disclosure of confidential information.

<sup>3</sup>Rate in doubt because of large number of data points withheld by disclosure rules.

Source: BEA, April, 1979.

Table 1.1.1-3. Earnings by economic sector, selected Utah counties, 1967-1977  
(in millions of 1977 dollars).

COUNTY	TOTAL EARNINGS			AGRICULTURE			MINING			CONSTRUCTION		
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE
Beaver	13.26	13.9	0.5	2.5	.95	- 9.2	(D)	.48	(D)	(D)	1.13	(D)
Davis	466.5	603.5	2.6	3.85	3.63	- 0.6	.72	.38	-6.2	11.42	39.6	13.2
Iron	39.94	54.18	3.1	5.8	.96	-16.5	3.6	4.03	1.1	2.8	4.52	4.9
Juab	15.96	14.33	-1.1	1.68	.83	-6.8	2.96	.2	-23.6	.36	.5	3.3
Millard	18.43	22.3	1.9	5.8	4.55	-2.2	(D)	.97	(D)	.67	.81	1.9
Salt Lake	1957.3	3108.3	4.7	9.29	7.31	-2.4	83.84	141.69	5.4	120.2	271.3	8.5
Tooele	129.2	142.6	1.0	.65	1.78	10.6	1.95	.43	-14.0	3.12	21.12	21.0
Utah	370.3	640.3	5.6	14.49	9.52	-4.1	3.2	6.6	7.5	24.39	53.2	9.3
Washington	28.36	49.96	5.8	3.25	2.35	-3.2	(D)	.39	(D)	2.55	5.51	8.0
Weber	432.1	492.9	1.3	6.74	2.37	-9.9	.1	1.27	28.9	26.39	36.8	3.4
State	6010.5	6010.5	4.2	119.2	82.4	-3.6	155.4	310.15	7.2	226.3	542.65	9.1
U.S.	921,344	1,164,755	2.4	31,950.7	26,163	-2.0	9,715.6	10,115	6.4	54,730.6	69,617	2.4
COUNTY	MANUFACTURING			SERVICES			GOVERNMENT					
	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE	1967	1977	GROWTH RATE			
Beaver	(D)	.96	(D)	.94	.9	0.0	2.29	3.03	2.8			
Davis	43.68	69.88	4.8	20.04	48.38	9.2	343.5	349.67	0.2			
Iron	2.19	3.71	5.4	4.48	6.14	3.2	9.9	15.95	4.9			
Juab	4.53	5.16	1.3	.64	1.13	5.8	2.66	3.08	1.5			
Millard	.52	1.45	10.8	1.44	1.57	0.9	4.67	5.57	1.8			
Salt Lake	343.1	495.5	3.7	297.8	492.3	5.2	301.6	458.4	4.3			
Tooele	7.22	17.93	9.5	3.03	4.06	3.0	104.3	86.14	-1.9			
Utah	118.2	202.0	5.5	75.85	145.3	6.7	58.81	87.6	4.1			
Washington	1.44	5.39	14.1	3.83	7.23	6.6	7.47	11.42	4.3			
Weber	57.66	69.22	1.8	55.86	72.96	2.7	149.2	154.7	0.4			
State	657.7	1011.2	4.4	510.	856.5	5.3	1102.8	1339.8	2.0			
U.S.	269,026	305,747	1.3	135,753	193,246	3.6	151,707	199,470	2.8			



Table 1.1.1-4. Per capita income and earnings shares by economic sectors, selected Utah counties, 1977.

COUNTY	1977 PER CAPITA INCOME	TOTAL 1977 EARNINGS (000s of \$)	COUNTY PERCENT OF TOTAL	AGRICULTURE SHARE (PERCENT)	MINING SHARE (PERCENT)	CONSTRUCTION SHARE (PERCENT)	MANUFACTURING SHARE (PERCENT)	SERVICES SHARE (PERCENT)	GOVERNMENT SHARE (PERCENT)
Beaver	5,114	13,900	0.2	6.9	3.4	8.2	6.9	5.8	21.8
Davis	5,860	602,505	10.0	0.6	0.1	6.6	11.6	8.0	58.0
Iron	4,693	54,175	0.9	1.8	7.4	8.4	6.8	11.3	29.4
Juab	3,797	14,328	0.2	5.8	4.9	2.8	36.0	7.9	21.5
Millard	3,978	22,296	0.4	20.8	4.3	3.6	6.5	7.0	25.0
Salt Lake	6,712	3,108,320	51.7	0.2	4.6	8.7	15.9	15.8	14.7
Tooele	5,684	142,636	2.4	1.2	0.3	14.8	12.6	2.8	60.4
Utah	4,854	640,317	10.7	1.5	1.0	9.2	31.5	22.7	13.7
Washington	4,381	49,961	0.8	4.7	0.8	11.0	10.8	14.5	22.9
Weber	6,158	492,894	8.2	0.5	0.3	7.5	14.0	14.8	31.4
State	5,943	6,010,516	100.0	1.4	5.2	9.0	16.8	14.2	22.3
U.S.	7,026	1,164,755,000		2.2	1.6	6.0	26.2	16.6	17.1

Source: BEA, 1979.

575-1

## **PUBLIC FINANCE (1.1.2)**

Principal governmental units in the Milford area include the City of Milford, the County of Beaver, and the Beaver County School District. For both the City of Milford and the County of Beaver, revenue sources are heavily weighted towards intergovernmental transfers and less so on locally raised revenues. Intergovernmental transfers account for over 60.0 percent of total general fund revenues for Beaver County while the corresponding figure for Milford is 55.9 percent (Tables 1.1.2-1 and 1.1.2-2). Expenditure patterns are somewhat similar between the two governments with the principal difference being the amount spent on public works. Beaver County's public work expenditures account for almost one-half of the county's total general fund expenditures. Milford's public works expenditures account for only 28.0 percent of its total general fund expenditures, slightly more than the 27.7 percent spent on public safety functions.

Assessed valuations are relatively low within the county. The City of Milford's assessed valuation is approximately \$2.1 million and the county as a whole has an assessed value of approximately \$15.2 million (Table 1.1.2-3). Each jurisdiction, as well as the school district, has outstanding debt that significantly reduces the reserve bonding capacities of each government. This indicates limited capability to absorb large-scale population in-migration and to provide for the associated capital infrastructure demands of these people.

School district revenues and expenditures are presented in Tables 1.1.2-4 and 1.1.2-5. As is the case with most school districts, state sources of revenue account for the majority of revenues available for maintenance and operation expenditures (65.9 percent in the case of Beaver County School District). This aid is over double that which is locally raised (30.8 percent). On the expenditure side, total maintenance and operation outlays account for approximately 80.0 percent of all expenditures including capital outlay and debt servicing. Instructional expenses (salaries and supplies) are the principal outlays in the maintenance and operation fund (59.8 percent) with fixed charges and maintenance and operation of the physical plant accounting for most of the remainder of the maintenance and operation fund (32.3 percent).

In summary, with the relatively low reserve bonding capacities in each jurisdiction, local governments will find it difficult to raise the capital necessary to provide the infrastructure associated with large-scale rapid growth.

## **POPULATION AND COMMUNITIES (1.1.3)**

Beaver County, Utah, is the primary area of analysis for the proposed operating base near Milford, with adjacent Iron and Millard counties also included due to the probability of spillover of effects into those areas. Beaver County's population, estimated as 4,079 in 1977, is 4,377 according to preliminary 1980 census data, an increase of 15.2 percent since 1970. The population of the sparsely settled county, which has a density of less than two persons per sq mi, is concentrated in the communities of Milford, Beaver, and Minersville, which together constituted 83 percent of the county's population in 1980. The population of Milford, 1,292 persons in 1980, remained virtually stationary since 1970. Iron and Millard counties, whose populations were 17,304 and 8,736, respectively, in 1980, grew more rapidly during the past decade than Beaver, increasing by 42.1 percent and 25.0 percent, respectively, according to preliminary 1980 census information.

Table 1.1.2-1. General fund revenue and expenditures Beaver County, Utah, for selected years.

SOURCE	1977	1978
<u>Revenues</u>		
Property Tax	92,876	141,723
License and Permits	2,657	3,610
Int. Revenues	498,699	547,072
Fines and Fees	128,635	163,182
Other	14,784	31,873
Total Revenues	737,651	887,460
<u>Expenditures</u>		
Administrative	166,933	197,329
Public Safety	103,670	125,256
Health and Welfare	21,773	23,755
Public Works	216,816	370,628
Parks and Recreation	16,351	18,428
Other	24,099	18,428
Total Expenditure	549,648	766,074

3402

Source: Beaver County General Fund,  
Statement of Revenues and Expenditures,  
1977-1978.

Table 1.1.2-2. General fund revenues and expenditures. City of Milford, 1978-1979.

SOURCE	FIGURE
<u>Revenues</u>	
Property Taxes	\$ 38,857
Licenses and Permits	5,525
Fines, fees, and charges	8,206
Inter-government transfers	70,442
Other	2,937
Total Revenues	125,963
<u>Expenditures</u>	
Administration	\$ 31,956
Public Safety	38,505
Public Health	84
Public works and highways	39,016
Parks, Recreation and Public Buildings	13,924
Other	15,623
Total Expenditure	139,108

3403

Source: City of Milford, General Fund, Statement of Revenue and Expenditure, 1978-1979.

Table 1.1.2-3. Assessed values, indebtedness limitation and reserve bonding capacities, 1979.

JURISDICTION	ASSESSED VALUE	INDEBTEDNESS LIMITATION	OUTSTANDING G. O. BONDS	RESERVE BONDING CAPACITY
Beaver County	\$ 15,236,878	\$ 1,218,878	\$ 300,000	\$ 918,950
School District <sup>1</sup>	\$ 14,499,249	\$ 2,319,880	\$ 510,000	\$ 1,809,880
City of Milford	\$ 2,059,764	\$ 329,562	\$ 216,000	\$ 113,562

1404

<sup>1</sup>School year 1978-1979.

Source: Utah Foundation, *Statistical Review of Government in Utah*, 1980 edition.  
Utah: Economic Facts, Utah Industrial Development Informational System,  
1979.

Table 1.1.2-4. Summary of revenues, by funds, Beaver School District, FY 1977-1978.

REVENUES	AMOUNT
Maintenance and Operating Fund	
Local Revenue	453,234
Property Taxes	453,077
Other	157
State Revenues	968,748
Basic School Program	726,686
Other	242,062
Federal Revenues	48,347
Transfer Payments-In State	—
Total Maintenance and Operating Fund	1,470,329
Capital Outlay and Debt Service Fund	
Local Revenue	259,082
Property Taxes	223,735
Other	35,347
State Revenues	—
Federal Revenues	17,031
Non-Revenue	—
Sale of Bonds	—
Other	—
Total Capital Outlay and Debt Service Fund	276,113
School Food Services Fund	69,800
Other Funds	6,930
Total All Funds	1,823,172

3413

Source: Utah Office of the State Superintendent of Public Instruction, 1978. 1977-78 Annual Report of the State Superintendent.

Table 1.1.2-5. Summary of expenditures,  
by funds, Beaver County  
School District,  
FY 1977-78.

FUNDS	EXPENDITURE
Maintenance and Operating Fund	
Administration	66,619
Instruction	857,159
Health Services	5,020
Transportation	30,966
Operation of Plant	143,151
Maintenance of Plant	37,217
Fixed Charges	282,739
Other	10,239
Total Maintenance and Operating Fund	1,433,110
Capital Outlay and Debt Service Funds	
Capital Outlay	153,484
Sites	23,807
New Buildings	—
Remodeling	95,684
Other	33,993
Debt Service	136,956
Total Capital Outlay and Debt Service Fund	290,440
Food Service Fund	64,843
Other Funds	6,930
Total - All Funds	1,795,323

3414

Source: Utah Office of the State Superintendent of  
Public Instruction, 1978. 1977-78 Annual  
Report of the State Superintendent.

Data for 1970 on the spatial distribution and age composition of the populations of Beaver, Iron, and Millard counties, shown in Table 1.1.3-1, indicate that all of Beaver County's population was classified as rural, although only 8.4 percent resided on farms. All three counties had populations whose age structure was slightly older than that in the state of Utah as a whole. Persons of school age constituted 28.7 percent, 25.9 percent, and 31.4 percent of the total population in Beaver, Iron, and Millard counties, respectively.

Components of population change including net migration and natural increase, or excess of births over deaths, are presented in Table 1.1.3-2 for the periods 1960 to 1970 and 1970 to 1976. Beaver County, in contrast to Iron and Millard, continued to experience a modest level of out-migration during the 1970s, although population increased due to natural increase exceeding the amount of out-migration. The Bureau of the Census estimated that Beaver experienced out-migration since 1970 equal to 1.2 percent of its population in that year. The state of Utah, in comparison, had net in-migration equal to 3.3 percent of its 1970 population during the same time period.

Projections of future population presented in Table 1.1.3-3 and Figure 1.1.3-1 indicate a continued pattern of moderate population growth in Beaver County through 1994 when the population is projected to reach about 5,500. Population expansion associated with several proposed large-scale projects including geothermal energy development, molybdenum mining and processing, and alunite mining would substantially increase the county's population over the trend-growth projection. With those projects, the county population is projected to grow at a rate of more than 18 percent annually during the five years from 1980 through 1985, although population would decline during the next five year period and grow more slowly from 1990 to 1994 (Table 1.1.3-4). The population growth due to those projects would increase the Beaver County population to almost 11,000 by 1985, although projected populations in 1994, about 10,600 persons, would be lower.

#### **LAND USE (1.1.4)**

##### **Community Land Use**

Milford is located within Beaver County, Utah. The Five County Association of Governments is the A-95 clearinghouse agency in the southwestern (planning) district and together with the Beaver County Planning and Development Council provides the overall guidance for planning activities in the region. Planning for Growth In Beaver County (August 1976) and the Five County Development Plan (September 1978) provide planning information for the area.

##### **Land Use Plans**

Beaver County adopted a long range master plan of development in 1972. The plan includes all of the unincorporated portions of the county along with the three incorporated communities of Beaver, Milford and Minersville. The plan was adopted in all communities except the city of Beaver. In the areas where the plan is in effect, implementing ordinances have been developed to assist in realizing the policies of the master plan. Figure 1.1.4-1 displays the land use and circulation elements of the Beaver County Master Plan.



Table 1.1.3-1. Selected population characteristics in the Nevada/Utah impact regions. (page 1 of 2).

STATE/ COUNTY	POPULATION				POPULATION DENSITY (1975) PERSONS/MI <sup>2</sup>
	1960	1970	1975	1977	
Nevada					
Clark	127,016	273,288	330,714	361,095	42
Eureka	767	948	1,072	1,119	<1
Lincoln	2,431	2,557	2,647	2,857	<1
Nye	4,374	5,599	5,591	6,113	<1
White Pine	9,808	10,150	10,221	8,776	1
Utah					
Beaver	4,331	3,800	4,086	4,079	2
Iron	10,795	12,177	14,609	15,444	4
Juab	4,597	4,574	4,947	5,156	1
Millard	7,866	6,988	7,878	8,297	1
Salt Lake	383,035	458,607	512,130	540,533	670
Utah	106,991	137,776	165,745	177,106	82
Washing- ton	10,271	13,669	18,127	19,809	7
Nevada	285,278	488,738	590,268	636,962	5
Utah	890,627	1,059,273	1,202,672	1,270,005	15

4028

Table 1.1.3-1. Selected population characteristics in the Nevada/Utah impact regions. (page 2 of 2)

STATE/ COUNTY	RURAL - URBAN DISTRIBUTION (1970)			AGE DISTRIBUTION (1970)				MEDIAN AGE (1970) IN YEARS
	PERCENT RURAL FARM	PERCENT RURAL NON-FARM	PERCENT URBAN	PERCENT UNDER 5	PERCENT 5-17	PERCENT 18-64	PERCENT 65+	
Nevada								
Clark	0.4	5.1	94.5	9.5	26.4	59.0	5.1	27.0
Eureka	30.1	69.9	0	11.4	22.9	60.1	5.6	30.5
Lincoln	12.7	87.3	0	9.7	32.4	47.7	10.2	27.5
Nye	5.0	95.0	0	8.3	24.2	60.4	7.1	30.1
White Pine	2.2	56.7	41.1	10.0	28.2	53.9	7.9	26.3
Utah								
Beaver	8.4	91.6	0	8.4	28.7	51.3	11.6	29.7
Iron	3.9	21.5	74.7	10.5	25.9	56.0	7.6	22.4
Juab	2.6	27.9	66.4	10.2	28.3	49.3	12.2	27.5
Millard	15.0	85.0	0	9.3	31.4	46.8	12.5	27.9
Salt Lake	0.6	4.2	95.1	10.6	29.1	52.7	7.6	23.9
Utah	2.6	9.9	87.6	10.9	26.8	56.3	6.0	21.7
Washing- ton	2.9	45.4	51.8	10.2	29.3	48.2	12.3	22.4
Nevada	2.1	17.0	80.9	8.9	26.0	58.8	6.3	27.9
Utah	3.1	16.3	80.6	10.6	29.6	52.5	7.3	23.0

4028

Sources: U.S. Bureau of the Census, 1975 County and City Data Book, 1977 Population Estimates for Counties and Incorporated Places (Nos. 841 and 857), and 1970 Census of Population.

Table 1.1.3-2. Population change and components of change 1960 to 1970 and estimated 1970 to 1976 change, by county, in the Nevada/Utah impact region. (page 1 of 2).

STATE/ COUNTY	ACTUAL POPULATION 1970	POPULATION CHANGE 1960-1970					
		COMPONENTS OF CHANGE				TOTAL CHANGE	
		NATURAL INCREASE		NET MIGRATION		NO.	PERCENT
		NO.	PERCENT	NO.	PERCENT		
Nevada							
Clark	273,288		29.8		85.4		115.2
Eureka	948		-2.5		26.1		23.6
Lincoln	2,557		4.6		0.6		5.2
Nye	5,599		8.1		19.9		28.0
White Pine	10,150		11.6		-8.1		3.5
Utah							
Beaver	3,800		9.3		-21.6		-12.3
Iron	12,177		16.4		-3.6		12.8
Juab	4,574		7.7		-8.2		-0.5
Millard	6,988		9.4		-20.6		-11.2
Salt Lake	458,607		18.8		0.9		19.7
Utah	137,776		23.1		5.7		28.8
Washington	13,669		16.8		16.3		33.1
Nevada	488,738		20.9		50.4		71.3
Utah	1,059,273		20.1		-1.2		18.9

4029

Table 1.1.3-2. Population change and components of change 1960 to 1970 and estimated 1970 to 1976 change, by county, in the Nevada/Utah impact region. (page 2 of 2).

STATE/ COUNTY	ESTIMATED POPULATION 1976	POPULATION CHANGE 1970-1976					
		COMPONENTS OF CHANGE				TOTAL CHANGE	
		NATURAL INCREASE		NET MIGRATION		NO.	PERCENT
		NO.	PERCENT	NO.	PERCENT		
Nevada							
Clark	343,400	21,200	7.7	48,900	17.9	70,100	25.6
Eureka	1,200	(2)	1.3	300	26.9	300	28.2
Lincoln	2,800	100	2.6	100	5.5	200	8.1
Nye	5,900	100	1.4	200	4.3	300	5.7
White Pine	10,000	700	6.6	-800	-7.9	-100	-1.3
Utah							
Beaver	4,100	400	8.7	(2)	-1.2	300	7.5
Iron	14,700	1,700	14.0	800	7.0	2,600	21.0
Juab	4,900	400	6.5	-100	-1.2	300	7.3
Millard	8,200	700	9.4	500	7.5	1,200	16.9
Salt Lake	524,700	53,100	11.6	13,000	2.8	66,100	14.4
Utah	170,300	27,200	19.7	5,300	3.9	32,600	23.6
Washington	18,700	1,900	13.9	3,200	23.2	5,100	37.1
Nevada	610,000	31,000	6.3	90,000	18.5	121,000	24.8
Utah	1,228,000	134,000	12.6	35,100	3.3	169,000	15.9

4029

Source: U.S. Bureau of the Census.

Table 1.1.3-3. Projected population by county, assuming trend growth and assuming growth related to energy and mineral development projects in some counties, Nevada/Utah impact region, 1980-1994.  
(page 1 of 2).

STATE/ COUNTY	ESTIMATED POPULATION 1977 <sup>1</sup>	PROJECTED POPULATION <sup>2</sup>			
		1980		1985	
		TREND GROWTH	HIGH GROWTH	TREND GROWTH	HIGH GROWTH
Nevada					
Clark	361,095	453,881	453,952	543,857	544,830
Eureka	1,119	1,089	1,089	1,169	1,169
Lincoln	2,857	3,657	3,658	4,043	4,049
Nye	6,113	8,267	8,268	10,799	10,804
White Pine	8,776	8,246	8,247	8,630	12,975
5-County Total	379,960	475,140	475,214	568,498	573,827
Utah					
Beaver	4,079	4,455	4,776	5,051	10,993
Iron	15,444	17,449	17,460	20,348	20,500
Juab	5,156	5,544	5,613	6,888	9,274
Millard	8,297	8,915	10,459	10,940	18,746
Salt Lake/ Utah	717,639	822,238	822,793	980,701	987,123
Washington	19,809	22,150	22,150	27,200	27,200
7-County Total	770,424	880,751	882,951	1,051,128	1,073,836
Deployment Region Total	1,150,384	1,355,891	1,358,165	1,619,626	1,647,663

4030

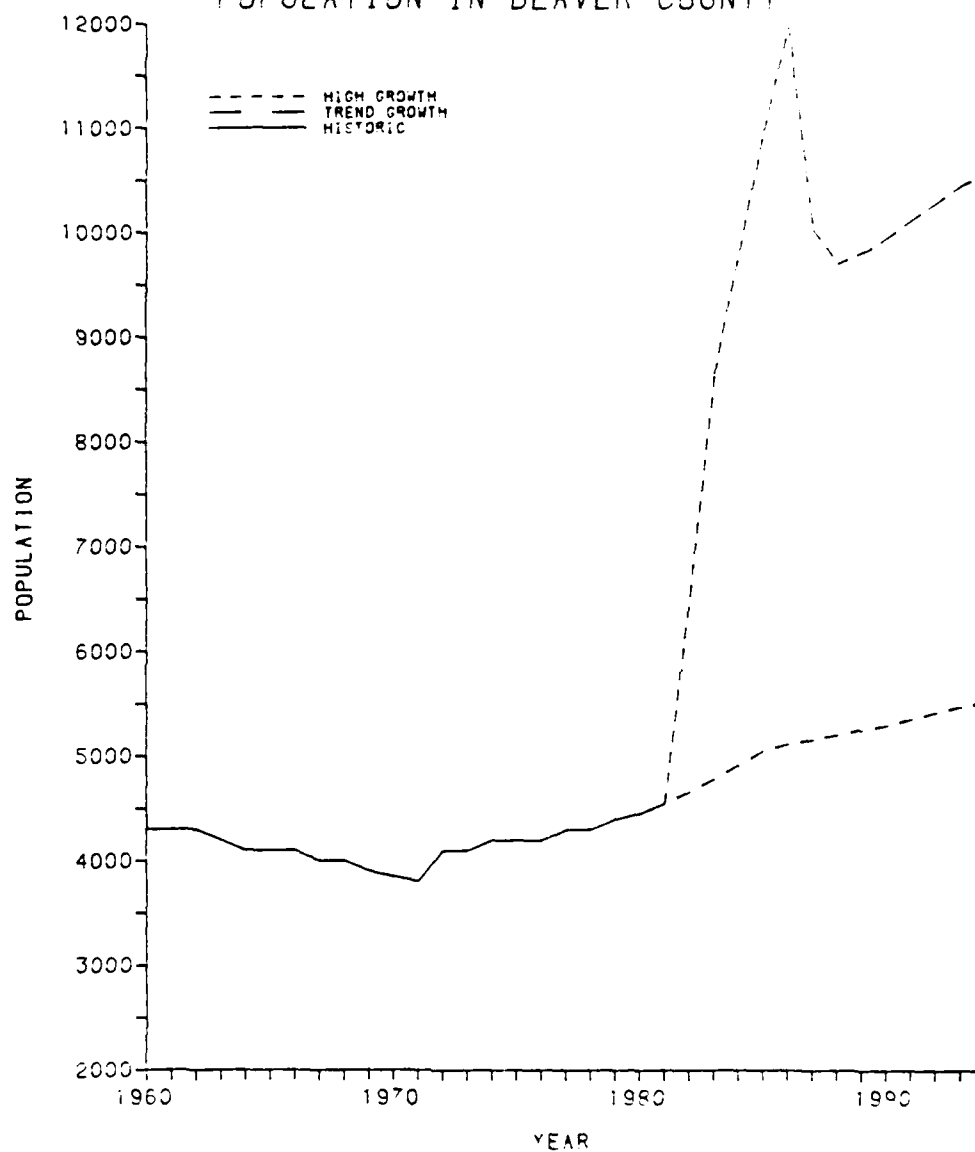
Table 1.1.3-3. Projected population by county, assuming trend growth and assuming growth related to energy and mineral development projects in some counties, Nevada/Utah impact region, 1980-1994. (page 2 of 2).

STATE/ COUNTY	PROJECTED POPULATION <sup>2</sup>			
	1990		1994	
	TREND GROWTH	HIGH GROWTH	TREND GROWTH	HIGH GROWTH
Nevada				
Clark	623,794	624,539	686,699	687,585
Eureka	1,278	1,278	1,368	1,368
Lincoln	4,424	4,429	4,715	4,720
Nye	11,971	11,974	12,901	12,906
White Pine	9,545	13,902	10,238	15,050
5-County Total	651,012	656,122	715,921	721,629
Utah				
Beaver	5,297	9,965	5,516	10,566
Iron	22,895	23,006	24,556	24,677
Juab	7,650	8,364	8,077	8,849
Millard	12,179	14,920	12,528	15,504
Salt Lake/ Utah	1,079,131	1,083,344	1,144,685	1,149,699
Washington	31,150	31,150	33,802	33,802
7-County Total	1,158,302	1,170,749	1,229,164	1,243,097
Deployment Region Total	1,809,314	1,826,871	1,945,085	1,964,726

<sup>1</sup>U.S. Bureau of the Census, 1977 Population Estimates for Counties and Incorporated Places, Series P-25, No. 841 (Nevada) and No. 857 (Utah), November 1979.

<sup>2</sup>Bureau of Economic and Business Research, University of Utah, 1980.

# HISTORIC AND PROJECTED BASELINE POPULATION IN BEAVER COUNTY



CA-0047-A

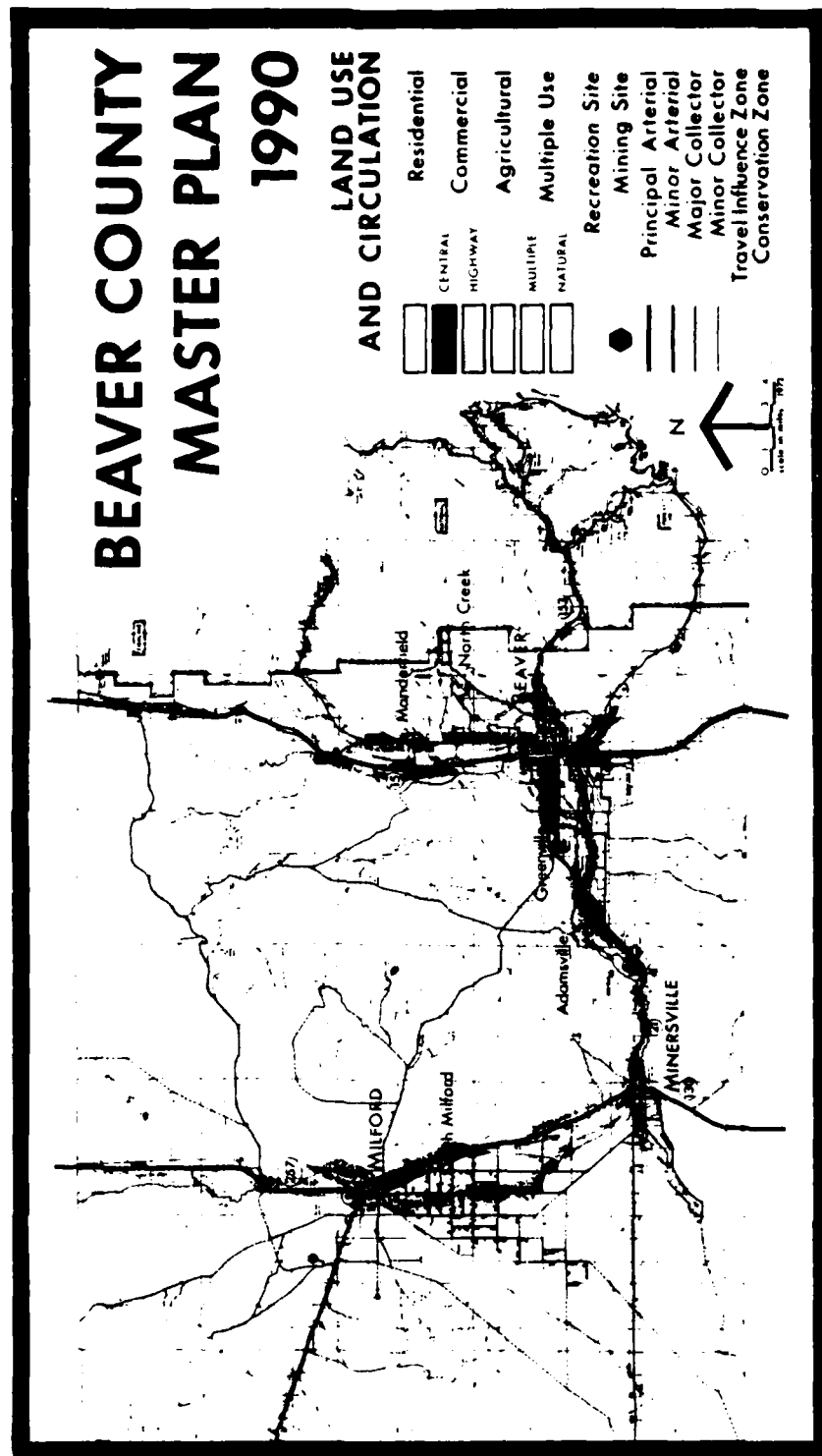
Figure 1.1.3-1. Historic and projected baseline population in Beaver County.

Table 1.1.3-4. Projected annual compound growth rates by county, assuming trend growth and high growth associated with energy and mineral development projects, Nevada/Utah impact region.

STATE/COUNTY	PROJECTED ANNUAL COMPOUND RATES OF POPULATION CHANGE					
	1977-1980		1980-1985		1985-1990	
	TREND GROWTH	HIGH GROWTH	TREND GROWTH	HIGH GROWTH	TREND GROWTH	HIGH GROWTH
<b>Nevada</b>						
Clark	7.92	7.92	3.68	3.72	2.78	2.43
Elko	-0.96	-0.96	1.43	1.43	1.80	1.72
Esmeralda	4.58	8.58	2.02	2.02	1.79	1.71
Washoe	10.50	10.50	5.49	5.49	2.08	1.89
White Pine	2.98	2.98	1.91	0.40	2.04	1.77
5-County Total	3.34	7.34	3.65	3.84	2.75	2.46
<b>Utah</b>						
Beaver	2.04	5.46	4.54	18.14	0.96	1.02
Iron	4.15	4.15	3.12	3.20	2.39	1.77
Utah	-0.45	2.87	4.44	10.86	2.12	1.42
Millard	2.42	5.12	4.11	12.24	2.17	1.96
Salt Lake Utah	4.04	4.06	3.50	3.71	1.93	1.51
Washington	0.79	5.79	4.10	4.10	2.75	2.06
7-County Total	4.50	4.85	3.66	5.99	1.90	1.51
Development Region Total	5.60	5.60	3.82	2.94	2.24	1.81

Source: H.E. Seligman, based on projections by the Bureau of Economic and Regional Research, University of Utah, 1980.





2080 A

Figure 1.1.4-1. Master plan for Beaver County, Utah, source: Mountain Area Planners, April 1972, Beaver County and Municipalities, Beaver, Milford, Minersville, master plans, 1970-1990.

The Beaver County land ownership data is shown in Table 1.1.4-1. Of the 1,642,927 ac of land in the county, 77 percent is under federal control and 10 percent under state control, leaving just 13 percent of the land in Beaver County privately owned. There are 39,441 ac of irrigated cropland and 668 ac of non-irrigated crop land along with 4,001 ac of pasture land in the county (Conservation Needs Inventory, 1970). Most of this agricultural development is on private land. Most of the federal and state land is used for livestock grazing purposes. In the towns of Beaver County, agricultural land is minimal and most of it will be converted to other uses as the towns continue to grow. Land use characteristics of each town are discussed below.

#### **Beaver City Land Use**

The land area of Beaver City is approximately 823 acres with about 6 percent used for agriculture and 32 percent presently vacant (see Table 1.1.4-2). Residential housing, including both mobile homes and conventional dwellings, accounts for about 29 percent of the land area of the community. The typical lot is in Beaver City about 100' x 200' in size, or about 20,000 square feet. Commercial development in Beaver accounts for about 13 acres of land and about 2 percent of the land area. There appears to be adequate room in the commercial areas for continued expansion. Figure 1.1.4-2 displays the land use and circulation elements prepared for Beaver City in 1972. To date, these elements have not been adopted by Beaver City.

#### **Milford Land Use**

Table 1.1.4-3 provides information on land use in the City of Milford. Of the 494 acres of land within Milford, approximately 88 acres or 18 percent are used for residential purposes and support slightly over 500 dwelling units. About 69 acres are used for agriculture, while nearly 305 acres are vacant. The land use and circulation elements for Milford are shown in Figure 1.1.4-3.

#### **Minersville Land Use**

Developed land uses in the town of Minersville utilize approximately two thirds of the land area (see Table 1.1.4-3). The amount of land devoted to public and commercial uses (approximately 3 percent) is low and can be expected to increase as the community grows. Roadways account for nearly 27 percent of the total land area and this amount is high, as it is in most pioneer communities of Utah. Figure 1.1.4-4 graphically displays the 1990 land use and circulation elements for Minersville.

The residential density in Minersville at the present time is about two acres per dwelling unit. However, of the approximately 368 acres of land in the community, only about 40 acres are actually used for residential purposes. In analyzing the land development pattern in Minersville, it appears that the typical residential lot is slightly less than 1/2 acre in size up to slightly over 1 acre, depending upon how the lots have been divided in any given block. There is presently a considerable amount of land that is either used for agricultural purposes at the present time, or is presently generally undeveloped. If this land was developed for residential purposes at a density of one acre per dwelling unit, some 219 new dwellings could be constructed without expansion of the existing community boundaries accommodating approximately 650 additional persons.

Table 1.1.4-1. Land ownership in Beaver City.

OWNERSHIP	PERCENT	AC	HA
Federal	77	1,266,443	511,642.9
State	10	156,330	63,157.3
Private	13	220,154	88,942.2
TOTAL		1,642,927	663,742.5

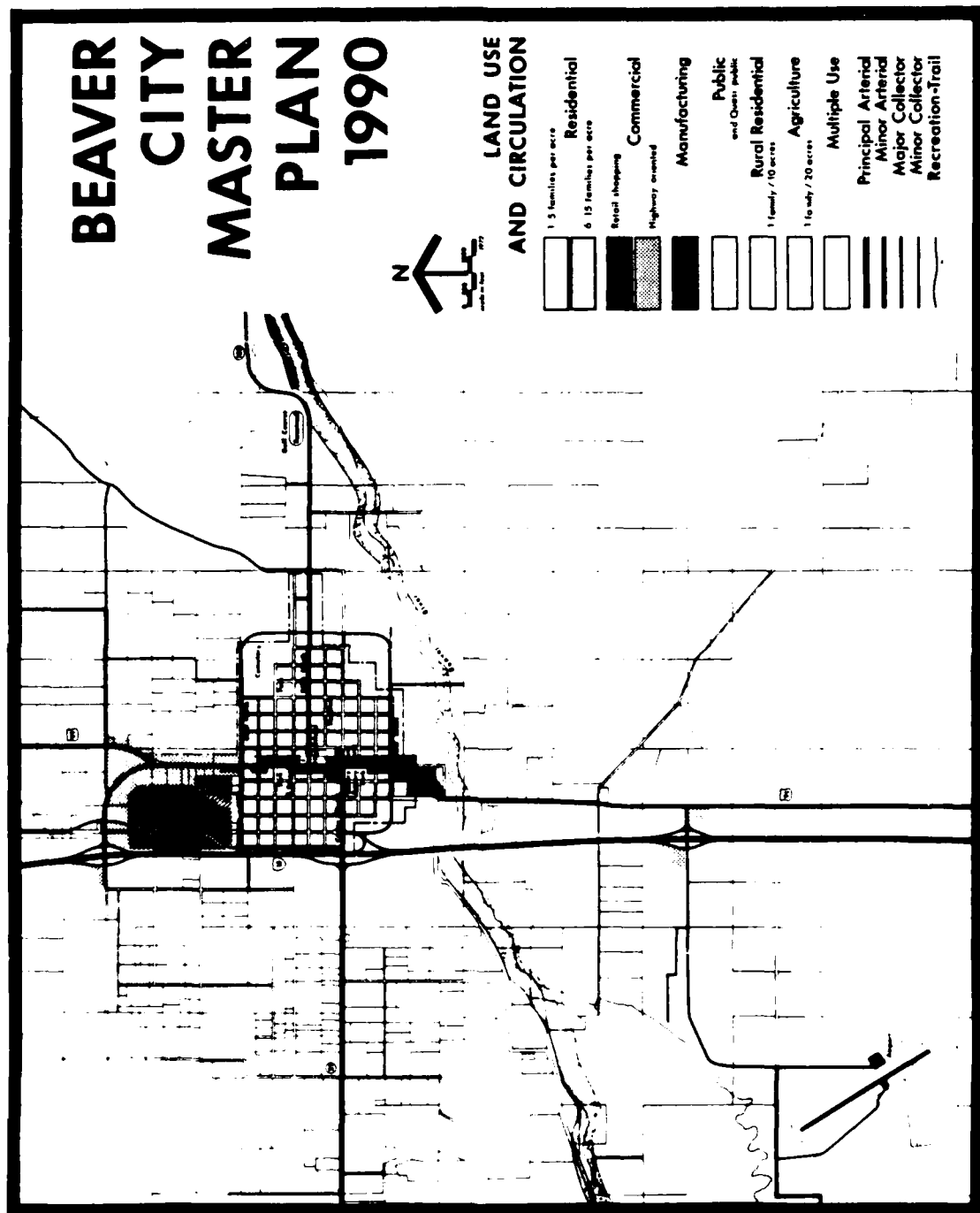
2629

Source: Conservation Needs Inventory, 1970.

Table 1.1.1.4-2. Existing land use - Beaver City.

LAND USE	ACRES	HA	PERCENT OF TOTAL
Single Family Residential	234.6	94.8	28
Mobile Home	5.7	2.3	1
Commercial	13.2	5.3	2
Schools	10.1	4.1	1
Park	11.0	4.4	1
Cemetery	11.0	4.4	1
Church & Religious	1.3	.5	—
Administrative & Professional	1.8	.7	1
Industrial	.4	.2	—
Agriculture	46.1	18.6	6
Streets	223.3	90.2	27
Vacant	264.8	106.9	32
TOTAL	923.3	372.4	100

2030



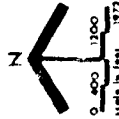
2083-A  
Figure 1.1.4-2. Master plan for Beaver City, Utah, source: Mountain Area Planners, April 1972, Beaver County and Municipalities, Beaver, Milford, Minersville master plans, 1970-1990.

Table 1.1.4. Land Use, 1978

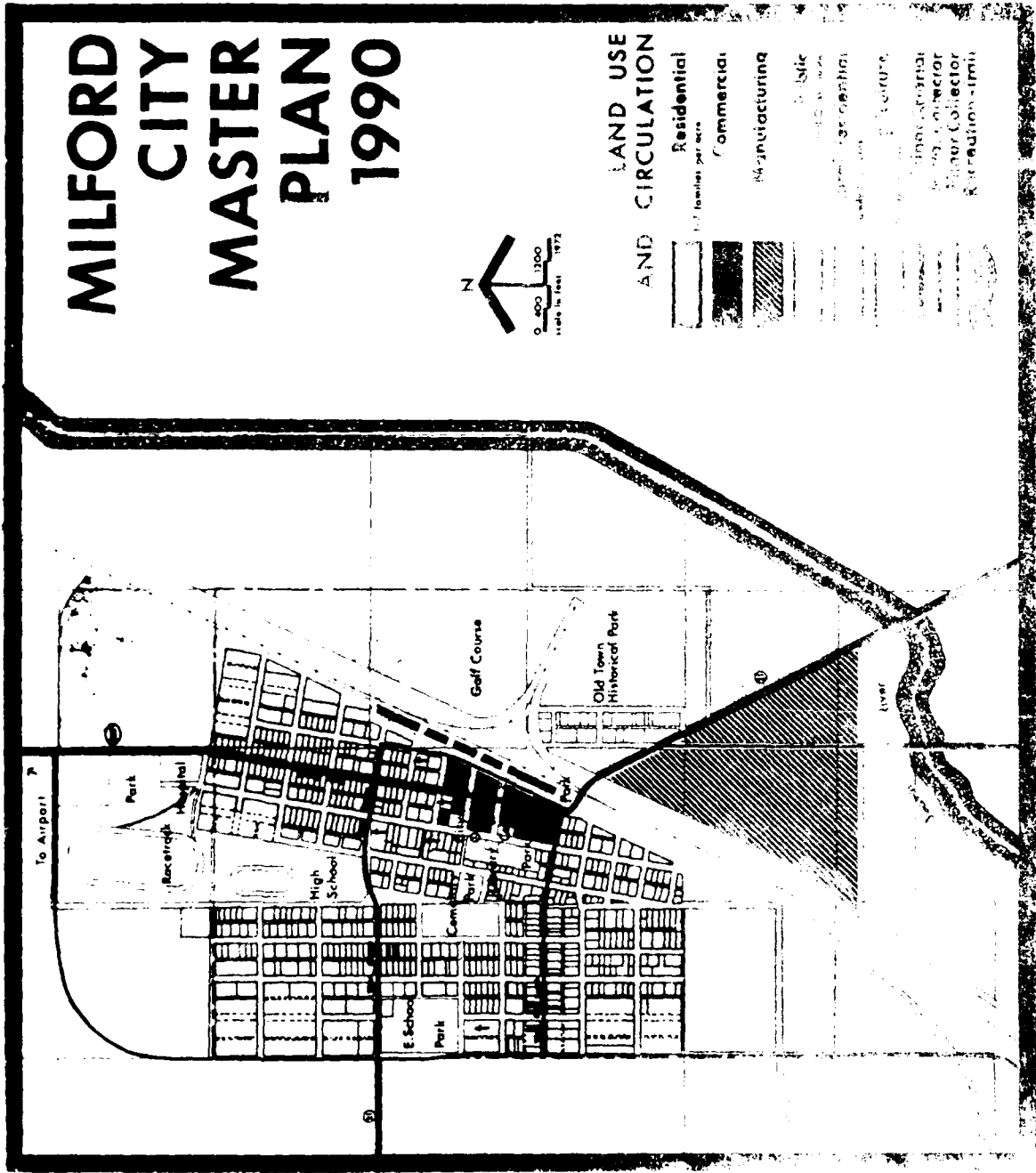
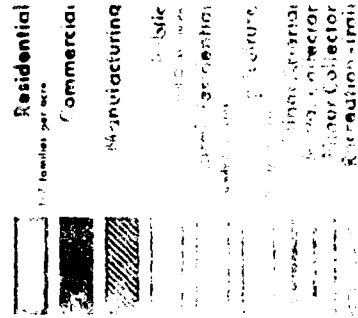
LAND USE	MILFORD	
	ACRES	PERCENT
Residential	87.6	1.2
Commercial	1.0	0.01
Industrial	8.4	0.12
Public	20.8	0.3
Agriculture	1.0	0.01
Roads	1.0	0.01
Vacant	1.0	0.01
Total	119.8	1.65

Source: Planning Commission, 1978. Land Use, 1978. Appendix A.

# MILFORD CITY MASTER PLAN 1990



## LAND USE AND CIRCULATION



2087 A  
Figure 1-1.4-3. Master plan for Milford City, Utah, source: Mountain Area Planners, April 1970.  
Beaver County and Municipalities, Beaver, Milford, Minersville master plans 1970-1990.

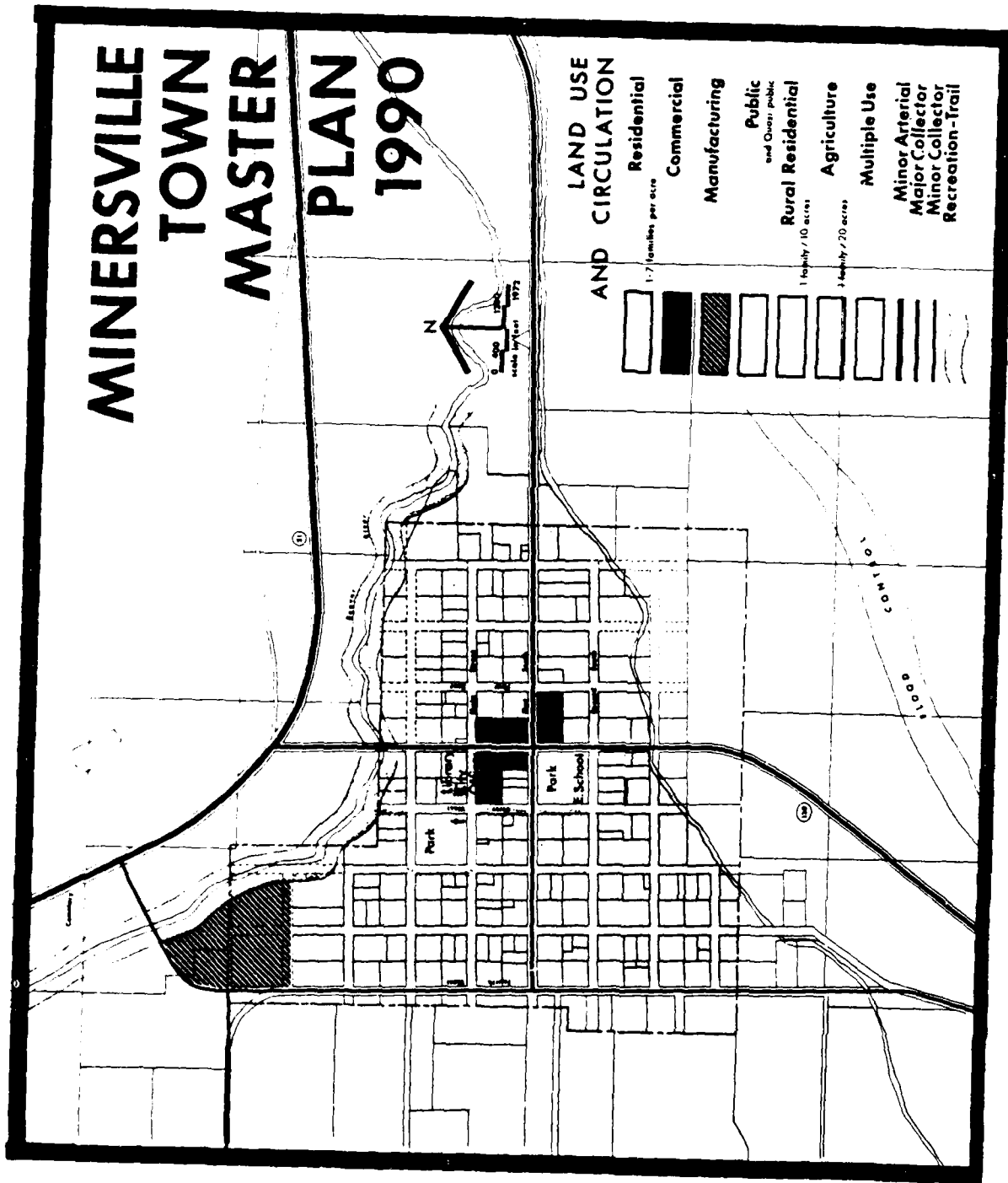


Figure 1.1.4-4. Master plan for Minersville Town, Utah, source: Mountain Area Planners, April 1972, Beaver County and Municipalities, Beaver, Milford, Minersville master plans, 1970-1990.

2081 A



In 1972, Beaver County published a master plan which has served as the basis for planning and decision-making since that time. Some of the policies stated in the plan that might impact the M-X development are provided below.

- Development within the county should be centered as much as possible within the three existing municipalities. No scattering of businesses or residential subdivisions should be allowed along the major highways, in the mountains or in the desert valleys.
- Areas used for agriculture and areas having agricultural potential should be protected and preserved for agricultural use.
- Quality and quantity of housing should assure a safe and sanitary dwelling unit for each family in the county. All residential developments should provide for water, sewer and other urban improvements.
- Commercial activities should be grouped together. Plans for the central *business districts* of Milford and Beaver should entail development into shopping centers, thereby avoiding commercial developments "strung out" along the highways.
- Industrial developments should be centralized in each municipality unless they are located at the site of a raw material location. Access should be provided by major highways so that vehicular traffic does not pass through residential areas.
- The development of county lands should be carefully evaluated for use based upon their value and need to 1) maintain present standards of living, 2) raise living standards for the benefit of all county residents, 3) preserve opportunity for enjoyment of future residents, 4) establish economic responsibility for services, 5) prevent encroachment of urban uses into agricultural areas.

In addition to recommendations on land use, the plan also addressed other areas. Standards for development were adopted in the area of residential housing, commercial and industrial development, preservation of agriculture, public facilities, and recreation, streets and highways, school, economic development and other similar areas of concern.

As a direct outgrowth of the 1972 master plan, implementing ordinances including a zoning ordinance, subdivision ordinance, and a building code were recommended for adoption in each of the towns in the county. The ordinances were not immediately adopted and, in fact, several years passed between the adoption of the master plan and zoning ordinances. After further studies, these ordinances were adopted in Beaver County, Milford and in Minersville. They, along with the master plan, have never been adopted and put into effect in Beaver City.

Zoning ordinances establish basic guidelines and standards of development for various categories of land use developments via residential, commercial, industrial, etc. In addition to setting forth development standards, the zoning map identifies areas where various types of development should take place. The developing of and adherence to a zoning ordinance provides the chief means of implementing develop

ment proposals identified in the master plan of development. Other ordinances also give similar direction to subdivision developments, building construction, etc.

### **Rural Land Use**

Oil/gas leases exist southwest of Milford. Principal land uses in the Milford area include cattle grazing on BLM-administered land. This part of Beaver County is an unzoned area, and the adjacent communities of Milford and Minersville do not have land use plans.

### **Agriculture**

There are no croplands located within the vicinity of the proposed OB southwest of Milford, Utah. The area is located in the BLM Pinyon Planning Unit where the BLM permits 19.4 acres per AUM for a total grazing authorization of 87,375 AUMs.

### **Recreation**

There are no fishing or recreational areas proximate to the OB site. Since the region is entirely in public domain, it is open to dispersed recreational use, including collecting activities, off-road recreational vehicle use, and small game hunting.

### **Mining**

There are no mining sites located on land where an operating base could be located.

### **LAND OWNERSHIP (1.1.5)**

Figure 1.1.5-1 presents the generalized distribution of land ownership in the Milford area. Roughly three-fourths of Beaver County is comprised of federal land holdings. The state controls about 9 percent, and private holdings, 16 percent, of Beaver County land. The area southwest of Milford is principally under BLM and state administration.

### **HOUSING (1.1.6)**

Beaver County experienced very moderate growth in housing over the last two decades. From 1960 to 1970 growth was very sluggish, averaging 0.1 percent a year, increasing the County's housing units from 1,395 to 1,409. After 1970 the average annual growth rate increased to 1.3 percent reaching 1,525 housing units by 1976. The proportion of the County's housing stock in single-family units decreased slightly from 92.2 percent in 1970 to 91.5 percent in 1976, while the share of multi-family units and mobile houses increased from 7.8 percent to 8.5 percent. It is estimated from annual permits authorizing residential construction, that for the 1970 to 1979 period, an average of 22 conventionally-built housing units were added to the housing stock each year. The same data show a maximum yearly authorization of 51 in 1972. In 1976 there were an estimated 40 mobile homes in Beaver County, constituting a 2.6 percent share of the housing units. In 1970, the owner-occupancy rate was 82.5 percent.

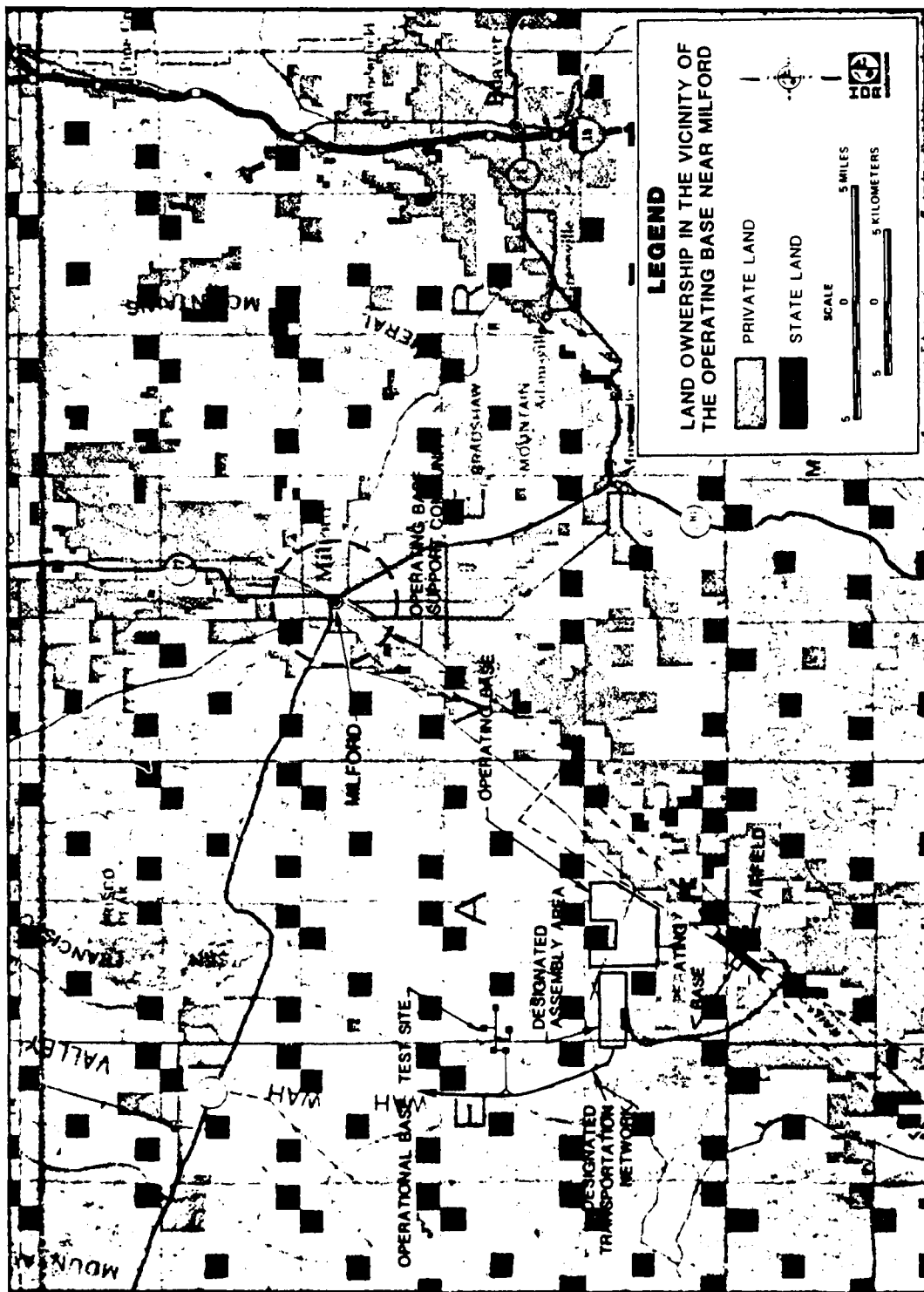


Figure 1.1.5-1. Land ownership patterns in the vicinity of the OB near Milford.

## **COMMUNITY INFRASTRUCTURE (1.1.7)**

### **Organization**

Beaver County is the basic political jurisdictional boundary in the area of the operating base. The cities of Milford and Beaver, accounting for nearly 80 percent of the county population, are each represented by a mayor and five councilmen, elected to four-year terms. The only other incorporated city in the county is Minersville, a small dairy and farming-oriented community located about 13 miles southeast of Milford.

Unincorporated communities include Manderfield, Greenville and Adamsville. County political agencies include the Beaver County Commission, Beaver County Planning Commission, the Beaver County School District, Beaver Planning and Development Council, County Service Area Number 2, the Milford Valley Memorial Hospital Revenue District, and the South Milford Fire District. Beaver County is a member of the Five County Association of Governments, but does not participate in the Southwest District Health Program, choosing instead to have its own County Health Organization.

### **Education**

The Beaver County School District with an enrollment of 1,026 students operates three elementary schools, and two junior high/senior high schools. Enrollment growth rates historically have been modest with little growth occurring in recent years. Presently, there are 620 pupils in the elementary grades and 406 pupils in grades 7-12. Approximately 53 teachers are employed in the school district. According to the school superintendent, the schools could presently accommodate another 650 pupils (see Table 1.1.7-1).

### **Health Care**

The health facilities serving Beaver County are located in Beaver City and Milford City. The hospital in Beaver holds 10 acute care beds, and has plans to add an additional 10 beds. Milford Valley Memorial Hospital contains 12 acute care beds and 20 extended care beds. One physician, one part-time dentist, six registered nurses and two licensed practical nurses serve the town. No mental health workers are located in this area (see Table 1.1.7-2).

### **Police Protection**

Police personnel in Beaver County consisted of two full-time police officers in Milford, three officers in Beaver City, and one part-time officer in Minersville. These patrolmen have three cars to use in their activities. Additional law enforcement protection is provided by the sheriff's department and the Utah State Highway Patrol, as shown in Table 1.1.7-3.

### **Fire Protection**

Fire protection is afforded Beaver County by a Joint Volunteer County Fire Department which operates two pumper trucks and an ambulance unit. Milford rates a fire insurance classification of "7," considered adequate for a community.

Table 1.1.7-1. Summary of educational statistics for study area locations.

COUNTY	ENROLLMENTS	EXCESS CAPACITY	TEACHERS	PUPIL/TEACHER RATIO	FUTURE PLANS
<sup>1</sup> White Pine County	1,664	1,064	106	15.6	Not Available
<sup>2</sup> Clark County	87,440 (79')	Very Little	3,730	23.4	Development Occurring
<sup>3</sup> Iron County	4,052	40	191	21.2	School Bond passed to build new elementary school.
<sup>4</sup> Beaver County	1,026	650	53	19.4	Not Available
<sup>5</sup> Millard County	2,176	250	88	24.7	Remodeling Occurring
<sup>6</sup> Dallam County	1,600	100	102	15.7	Available land for future expansion.
<sup>7</sup> Curry County	9,432	750	422	22.3	Expansion of classrooms in all levels is planned.
<sup>8</sup> Lincoln County	911	170	54	16.9	Not Available

1347

- <sup>1</sup>Nevada Bureau of Business and Economic Research, July 1977. Socioeconomic Analysis of the White Pine Power Project, Reno, Nevada.
- <sup>2</sup>Nevada Department of Education, 1979-80. Enrollment and Certified Personnel Information. Vol. 22. Research Bulletin, Nevada Department of Education.
- <sup>3</sup>Iron County School District. 20 May 1980. C. Morris, School Superintendent - Telephone Communication.
- <sup>4</sup>Beaver County School District. 20 May 1980. L. Haslam, School Superintendent - Telephone Communication.
- <sup>5</sup>Millard County School District. 20 May 1980. Ken Topham, School Superintendent - Telephone Communication.
- <sup>6</sup>Calhart Independent School District. 22 May 1980. D. Williams, School Superintendent - Telephone Communication.
- <sup>7</sup>Cannon Air Force Base Environmental Coordinator. 1975. Tab A-1. Environmental Narrative, Clovis, New Mexico.
- <sup>8</sup>U.S. Department of the Interior (BLM), Social-Economic Profile, Lincoln County, July 1976.

Table 1.1.7-2. Health services and facilities in study area locations.

COUNTY/ COMMUNITY	HOSPITAL FACILITIES	PHYSICIANS	RN, LVN, LPN	DENTISTS	MENTAL HEALTH WORKERS	COMMENTS
White Pine County/ Elv. <sup>1</sup>	43 Acute 99 Skilled Nursing	4	19 RN 10 LPN 46 Aids	3	6	Nursing home under construction; 99-bed capacity
Clark County/ Coyote Springs, <sup>2</sup> Area	1,778 Acute 919 Long- Term	508 (78 <sup>1</sup> )	1,412 RN 594 LPN	163	N/A	
Iron County/Beryl and Vicinity <sup>3</sup>	73 Acute	15	35 Nurses	10	2	Community has excess capacity in hospital. Present utilization rate is less than 50 percent.
Beaver County/ Milford and Vicinity <sup>4</sup>	12 Acute 20 Long-Term	1	6 RN 2 LPN	1 Part-time	0	
Millard County/ Delta and Vicinity <sup>5</sup>	18 Acute 18 Long-Term	5	7 RN 6 LPN	4	2	
Dallam and Hartley Counties/Dalhart and Vicinity <sup>6</sup>	67 Acute 80 Long-Term	5	10 RN 20 LVN	4	N/A	Expansion plans are in process to double the number of doctors and hospital beds in area.
Curry County/Clovis and Vicinity <sup>7</sup>	106 Acute 100 beds at Cannon AFB	22	110 Nurses	18	12	Hospital utilized at 65 percent.
Lincoln County/ Panaca, Pioche, Caliente, and Vicinity <sup>8</sup>	10 Acute 9 Skilled Nursing	2	6 RN	1	N/A	

<sup>1</sup>Nevada Bureau of Business and Economic Research, July 1977. Socioeconomic Analysis of the White Pine Power Project. Reno, Nevada.

<sup>2</sup>Clark County Health District, 6 June 1980. A. Dague, Health Planner, Telephone Communication.

<sup>3</sup>Bureau of Economic and Business Research, 1979. Community Economic Facts—Cedar City.

<sup>4</sup>Milford Valley Memorial Hospital, 6 June 1980. J. Williams, Director of Nursing, Telephone Communication.

<sup>5</sup>Architects/Planners Alliance, Inc., 1979. Socioeconomic Analysis—Lynnndyl Alternative Site, Salt Lake City.

<sup>6</sup>Dalhart Hospital, 6 June 1980. A. Peterson, Director of Nursing, Telephone Communication.

<sup>7</sup>Clovis High Plains Hospital, 6 June 1980. S. Grigsby, Director of Nursing, Telephone Communication.

<sup>8</sup>U.S. Department of Interior (BLM), Social-Economic Profile, Lincoln County, July 1976.

1348-2

Table 1.1.7-3. Police protection characteristics  
in study area locations.

COUNTY/COMMUNITY	POLICE OFFICERS	SHERIFF	HIGHWAY PATROL
White Pine County <sup>1</sup> Ely and vicinity	14	15	3
Clark County <sup>2</sup> Coyote Springs area	738	Serves Area	Serves Area
Iron County <sup>3</sup> Beryl and vicinity	15	Serves Area	Serves Area
Beaver County <sup>4</sup> Milford and vicinity	2	Serves Area	Serves Area
Millard County <sup>5</sup> Delta and vicinity	3	4	6
Dallam/Hartley Counties <sup>6</sup> Dalhart and Vicinity	7 (Dallam) 0 (Hartley)	14 (Dallam) 2 (Hartley)	4 (Dallam) 0 (Hartley)
Curry County <sup>7</sup> Clovis and Vicinity	72	Serves Area	Serves Area
Lincoln County <sup>8</sup> Panaca, Pioche, Caliente	6	7	1

1349-1

<sup>1</sup>White Pine County Sheriff's Department, 5 June, 1980. M. Burns, Deputy, telephone conversation.

<sup>2</sup>Las Vegas Police Department, 5 June 1980. Officer Bottomly, Personnel Officer, telephone conversation.

<sup>3</sup>Bureau of Economic and Business Research, 1979, Community Economic Facts—Cedar City.

<sup>4</sup>Five County Association of Governments, 1976, *Planning for Growth in Beaver County*, Beaver County Planning and Development Agency.

<sup>5</sup>Architects/Planners Alliance Inc. 1979. Socioeconomic Analysis—Lynndyl Alternative Site, Salt Lake City.

<sup>6</sup>Panhandle Regional Planning Commission, 22 May 1980. M. Kenderdine, Planner, telephone conversation.

<sup>7</sup>Clovis Police Department, 5 June 1980, Y. Garcia, Secretary I, telephone conversation.

<sup>8</sup>U.S. Department of Interior (BLM), Social-Economic Profile, Lincoln County, July 1976.

Table 1.1.7-4 presents the number of volunteers available in the communities of Beaver, Milford, and Minersville.

#### **Water Supply and Distribution**

Water for domestic use is from three deep wells. Two other wells are used for irrigation. The city of Milford has water permits allowing a culinary use of 1,978 gpm and a total water right of 2,240 gpm. Per capita use in Milford is very high, due to lack of metered service and a high rate of leakage. Average daily water use is presently estimated to be 400 gallons per capita per day and may be greater than 800 gpcd during peak times.

Water rights total 1,978 gpm, 85 mg per month. Average monthly usage is 36 mg. Pumping capacity limits growth to a population of 1,350.

#### **Wastewater Collection and Treatment**

Most of Milford has sewers constructed over 100 years ago and the system is in poor condition. Connections are 460; average daily flow 0.17 mgs. The system has a design population of 2,000 and a design average flow rate of 0.24 mgd.

#### **Solid Waste**

Illegally operated open dumps currently serve the area since there are no public solid waste facilities available in Milford. The city must conform to Utah State Health Laws requiring a sanitary landfill site for all population centers.

#### **Parks and Recreation**

The Milford community possesses a 2.5 acre (1 ha) community park in the center of town which includes an outdoor swimming pool. Additionally, one elementary school has a playground, and athletic opportunities are available at the high school. Nearby are several other more substantial facilities, including Minersville Lake, and several U.S. Forest Service sites--Anderson Meadow, Kents Lake, Little Reservoir, Ponderosa, Little Cottonwood, and Mahogany Cove.

#### **QUALITY OF LIFE (1.1.8)**

Beaver County had a total population of 4,300 persons in 1978, with the majority of these persons located in Beaver, Milford, and Minersville. Between 1970-1977, Beaver County experienced an average annual growth rate of 1.6, a level below the Utah mean of 2.5. Beaver County's population density at 1.7, is also much less than the Utah mean of 15.5. As with most other rural counties in Utah, Beaver County has been experiencing a declining population, out-migration and an increasing proportion of older persons. Between 1960-1970, Beaver County's population fell by 12.3 percent. (U.S. Bureau of Census, 1971). This population decline is largely attributable to young people leaving the area in search of employment opportunities elsewhere.

In general, people residing in Beaver County tend to be older, stable citizens who appreciate their community and environment. A study by Lewis and Associates (1974), surveyed residents of Beaver County and found a high level of general



Table 1.1.7-4. Fire protection characteristics in study area locations.

COUNTY/COMMUNITY	FULLTIME FIRE DEPARTMENT	VOLUNTEER FIRE DEPARTMENT	FIRE INSURANCE RATING	COMMENTS (EQUIPMENT, ETC.)
White Pine County, Ely <sup>1</sup>	5 Paid Staff	45 Volunteers	5	Rescue mini pumper, 250 gallon capacity 1300 gallon/minute pumper, 1000 gallon capacity 1350 gallon/minute 1 GMC tank/pumper combination 650 gallon/minute La France, 240 gallon capacity 350 gallon/minute La France, 240 gallon capacity 750 gallon/minute pumper, 500 gallon capacity 1500 gallon/minute Walter Foam truck 9 Fire trucks and 2 snorkler trucks.
Clark County, Las Vegas <sup>2</sup>	254 Fire Fighters	-	3 (will move into "2" rating soon)	
Iron County, Cedar City <sup>3</sup>	3 paid staff	32 Volunteers	5	4 pumper trucks (1,250 and 750 gallon) 2 brush trucks 1 crash truck at airport 1 snorkle truck Several ambulances Several pumper trucks
Beaver County, Milford <sup>4</sup>	-	High School Students act as Volunteer Fireman	7	
Millard County, Delta <sup>5</sup>	-	25 Volunteer	7	3 pumper trucks (500, 750, and 1,000 gallon)
Fillmore	-	30 Volunteers	7	3 pumper trucks (500, 750, and 250 gallon)
Dallam and Hartley Dalhart <sup>6</sup>	1 paid staff	30 Volunteers	24¢ Key Rating Rating Range from 1¢ (excellent) to \$1.00 (poor)	Two 1,500-gallon pumper trucks One 250-gallon mini-pumper One back-up pumper (old) Five 4-Wheel drive vehicles
Curry County Clovis <sup>7</sup>	75 Fireman (EMP trained)	-	6 (will move into a "4" soon)	Eight 1,500-gallon pumpers Two snorkle units One crash truck and several ambulances
Lincoln County <sup>8</sup> Panaca, Pioche, Caliente	-	55-60 Volunteers	7 Pioche, Caliente 8 Panaca	One 250-gallon pumper Four 500-gallon pumpers One 450-gallon pumper Two 125-gallon slip on units

1350-1

<sup>1</sup>Ely Fire Department, 5 June 1980. F. Richia, Dispatcher, telephone conversation.

<sup>2</sup>Las Vegas Fire Department, 5 June 1980. R. Horrocks, Chief Secretary, telephone conversation.

<sup>3</sup>Cedar City Fire Department, 6 June 1980. C. Neilson, Fire Marshall, telephone conversation.

<sup>4</sup>Five County Association of Governments, 1976, Planning for Growth in Beaver County, Beaver County Planning and Development Council.

<sup>5</sup>Architects/Planners Alliance Inc., 1979, Socioeconomic Analysis-Lyndyl Alternative Site, Salt Lake City.

<sup>6</sup>Dalhart Fire Department, 10 June 1980. M. Stipe, Fire Chief, telephone conversation.

<sup>7</sup>Clovis Fire Department, 10 June 1980. J. Carter, Fire Chief, telephone conversation.

<sup>8</sup>U.S. Department of Interior (BIM), Social-Economic Profile, Lincoln County, July 1976.

satisfaction among the population of the communities. The advantages that people mentioned about their community include access to out-of-doors; good place to raise family; friendliness of people; and absence of a polluted environment.

Disadvantages included the lack of jobs for young people, lack of good shopping centers, lack of cultural refinement, and lack of opportunities for earning a livable income.

An examination of the quality of life indicators for public services describe Beaver County's situation as variable (Table 1.1.8-1) Health services on the whole, are adequate with a high number of nurses and dentists per 1,000 population, but a lower number of physicians. Public safety indicators list only one police officer/1,000 population in Beaver compared to 2.3 officers/1,000 population for the state mean. The level of social disorganization in Beaver, however, indicated by the lower divorce, suicide, alcoholism, and crime rates, may require less police assistance than other areas. The presence of older, stable and more satisfied residents in Beaver County make the incidence of social disorder much less prevalent.

On a comparative basis, Beaver County education seems to have adequate facilities to meet the needs of the present population. Beaver County is somewhat behind the Utah mean in terms of median school years completed (12.3 years compared to the state average of 12.8). The pupil/teacher ratios show the classrooms to be less crowded than the average class of approximately 25 students for the state.

Beaver County's economic situation is dominated by agriculture, by nonfarm proprietors, state and local government, and trade. The construction sector in Beaver has been one of the fastest growing areas in the economy; followed by manufacturing and services. From 1970 to 1977, the civilian labor force growth rate was 4.1, a moderate level of growth in comparison to other study area counties. Unemployment has been fluctuating as a result of agricultural change, but has been consistently lower than the state mean since 1971. In 1977 though, the unemployment rate at 7.0 was higher than the state level of 5.3. The citizens of Beaver County have approximately 18 percent of their population receiving public assistance, compared to the Utah mean of 14.7 percent. Per capita income has also been rising since 1970, and in 1977, the per capita income was \$5,114. This is 86 percent of the Utah average.

People in Beaver County were asked by Lewis and Associates how they would like to see public funds appropriated. Over 50 percent of the respondents wanted public tax money to be spent on the following:

1. Better health and medical services
2. Improved educational facilities
3. Developing local industry
4. Better housing
5. Recreational opportunities and cultural refinement

Like many small town communities, the citizens of Beaver County would like to see changes occur that would be beneficial to their community, and that would allow more young people to remain in the area. Developing local industry is supported as a method for doing this.



gas pipeline may be built, passing near the proposed base site. Equipment is supplied by bottled gas, fuel oil, and propane, all of which are trucked in from Las Vegas, Nevada, and Salt Lake City, Utah. Power is supplied via two 46 kV subtransmission lines.

#### 1.1-10. ROAD CORRELATION (1.1-10)

The proposed base site is located approximately 20 mi southwest of the community of Milford, Utah. It lies along an unpaved county road which runs north-south between the towns of Lund and Milford. The community of Milford is served by paved roads, which all plus other county roads. A schematic map of the existing road network, the proposed base site and 1978 traffic volumes is shown in figure 1.1-11. Traffic volume along all of the roads in the vicinity is less than 1000 vehicles per day.

#### 1.1-11. NATIVE AMERICANS (1.1-11)

##### 1.1-11.1. Background: Native Americans

Archaeological and historic sites associated with Southern Paiutes are located throughout the Southern Escalante Desert and surrounding mountains. The archaeological record can occur in the well-watered areas of the San Juan Mountains and the Montan ranges. The Beaver River Valley was part of the traditional territory of the Kwumpits band of Southern Paiutes, and direct archaeological evidence is present in the area. It is likely that strong cultural ties to the land exist among the people.

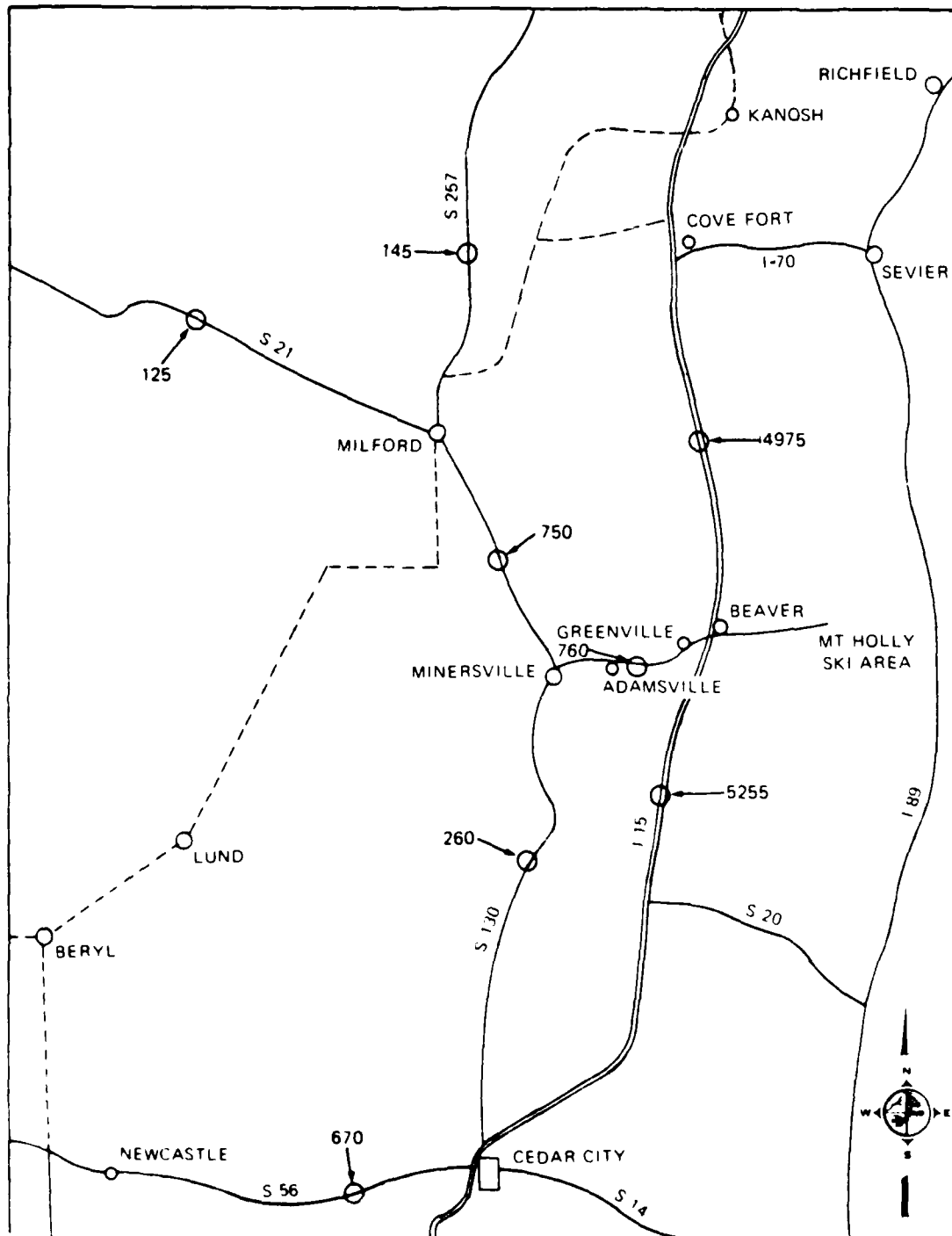
The proposed base site, the Milford and Beryl encompass the same Native American cultural resources, the discussion given in Section 1.1-11 of this report is relevant.

##### 1.1-11.2. Background: Native Americans

The proposed base site lies within the aboriginal territory of the Kwumpits band of Southern Paiutes. The northernmost band occupied the once game-rich area of the San Juan Mountains. The area under consideration is also within the possible territory of the San Juan Peak band of Southern Paiutes. Descendants of the Kwumpits band live today in the Cedar City, Kanosh, and Richfield Indian colonies. Further site-specific data is currently in progress.

The proposed base site is a Native American cultural resources in the Milford area. The area is a historically important Southern Paiute site. Sites are expected along the road network. Considerable disturbance of these remains may have already occurred. Sensitive pine-nut gathering areas are likely to be present in the mountain ranges immediately surrounding the Milford area. In addition, Southern Paiutes regard the nearby mountains as a year-round range includes the Escalante Desert area. The area is a culturally important feature.

The proposed base site is a Native American community at the Milford area. The area lies between the Kanosh and Richfield colonies to the north and the Cedar City colony to the south.



LEGEND 000 1978 TRAFFIC VOLUMES, MILFORD, UTAH

SCHEMATIC NOT TO SCALE 2332-A  
2572-A

Figure 1.1.1-1. Existing traffic volumes in the vicinity of Milford.

## **ARCHAEOLOGICAL AND HISTORICAL RESOURCES (1.1.12)**

Intensive surveys have not been conducted in the vicinity of the Milford OB, and there are no currently recorded sites in the immediate project area. However, the proximity of numerous sites to the north of Milford suggests that the Beaver River drainage is the most sensitive area in the region. Types of sites that are predicted to occur in the OB vicinity include limited activity sites such as lithic scatters and short term campsites, and historic sites due to the proximity of the historic mining area of Shauntie near Topache Peak.

Within the Milford watershed, there are 70 previously recorded archaeological sites (Table 1.1.12-1). Within a 20 mi radius of the Milford OB, approximately 45 percent of the land is of moderate to high sensitivity.

### **Paleontological Resources**

The Milford OB siting area is located on alluvial valley fill in an area that at one time was inundated by Lake Bonneville. The disturbance of Bonneville sediments through excavation has the potential for destroying fossils contained in the sediment. Sites proposed for excavation or earth moving activities can be examined to determine the possible presence of fossil material.

## **OTHER PROJECTS (1.1.13)**

### **Economic Activity**

While economic growth has been relatively slow, expansion of mineral production and the development of energy resources are forecast for the county in the near future. Geothermal energy exploration and construction of a 20-megawatt plant at Roosevelt Hot Springs is expected to increase county employment levels by about 100 beginning in 1980 and continuing through 1994. The second major project forecast--the Pine Grove Molybdenum Project (PGMP)--includes mining and milling of 10,000-30,000 tons of ore per day. PGMP will employ about 500 workers beginning in 1982 increasing to around 700 in 1984 and continuing at that level through 1994. Alunite mining and processing is the third major project scheduled in Beaver County. About 1,000 workers would be employed mining, milling, and processing 12,000 tons of ore per day beginning in 1986 and continuing through 1994. Employment growth in the mining and energy industries will spur additional growth in other industries in the county. The trade, services, and construction sectors will receive much of this induced employment.

Table 1.1.13-1 presents employment projections over the 1980-1994 period for Beaver County. These forecasts have been separated into Baseline 1 and Baseline 2. The first set of projections are essentially an extrapolation of 1967-1978 trends in Beaver County. Baseline 2 includes Baseline 1 growth plus the Roosevelt Hot Springs geothermal power project, PGMP, and alunite mining and processing. These projections have been developed by the University of Utah's Bureau of Business and Economic Research (BBER). They project employment by place of residence and not by place of work, as in Tables 1.1.1-1 and 1.1.1-2. In the case of Beaver County, some people living in the county work elsewhere, thereby increasing BBERS employment figures. In comparison to the 1977 employment figure of 1,726 presented in the above mentioned tables, employment by place of residence for this

2. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:

	GRAPHIC SOURCE		
	NEW YORK	NEW YORK	NEW YORK
	BRAND	BRAND	BRAND
1. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
2. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
3. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
4. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
5. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
6. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
7. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
8. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
9. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			
10. The following information was obtained from the Bureau of Census, Washington, D.C., on the subject of the above-named individual:			

Table 1.1.13-1. Projected employment by major industrial sector,  
Beaver County, 1980-1994.

BEAVER COUNTY	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<u>Baseline 1</u>															
Agriculture	26	27	27	27	27	27	28	28	28	28	28	28	28	29	29
Mining	45	46	47	48	50	51	52	54	55	56	58	59	61	62	64
Contract Construction	54	55	58	60	63	65	67	68	69	70	72	74	75	76	79
Manufacturing	124	127	131	134	138	141	144	147	149	152	156	158	162	165	169
Transport, Communication, Utilities	198	204	210	217	223	232	237	243	249	255	261	268	275	282	289
Wholesale & Retail Trade	350	360	372	384	397	410	417	424	430	437	443	451	458	466	474
Finance, Ins., Real Estate	31	32	34	36	37	38	39	39	41	42	42	43	43	44	44
Services	212	222	231	242	255	268	274	279	284	291	296	302	309	316	322
Government	353	359	366	374	382	389	394	396	399	402	405	408	410	413	415
Non-Farm Proprietors	75	77	80	83	85	88	90	91	91	92	94	95	96	97	98
Total	1,469	1,511	1,555	1,605	1,657	1,712	1,741	1,768	1,796	1,825	1,854	1,886	1,918	1,950	1,980
<u>Baseline 2</u>															
Agriculture	26	27	28	29	30	30	32	31	30	31	31	31	31	32	32
Mining	164	130	628	629	806	803	804	805	1806	1807	1809	1810	1812	1813	1815
Contract Construction	57	108	293	1076	1322	1703	2050	1189	144	146	144	152	153	162	159
Manufacturing	124	127	135	140	147	152	156	156	158	162	165	168	171	174	178
Transport, Communication, Utilities	199	205	223	234	244	254	262	262	268	274	281	287	295	303	310
Wholesale & Retail Trade	364	374	457	556	622	666	722	631	638	650	659	674	686	699	704
Finance, Ins., Real Estate	34	35	54	74	88	98	109	90	92	93	90	96	96	97	100
Services	223	236	313	411	472	554	593	498	499	504	527	530	549	550	568
Government	361	370	423	484	532	481	603	543	538	555	562	564	567	580	585
Non-Farm Proprietors	80	83	116	149	172	187	210	175	175	171	176	181	181	186	187
Total	1,635	1,700	2,669	3,783	4,434	5,020	5,542	4,379	4,348	4,395	4,443	4,492	4,541	4,595	4,636

Source: Bureau of Business and Economic Research, University of Utah, 1980.

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same year equals 1,740 jobs (Utah Department of Employment Security, 1980). Employment by place of residence for 1978 and 1979 equals 1,910 and 1,960, respectively. Forecasts for both baselines project a decline in employment by place of residence to 1,469 (Baseline 1) and 1,635 (Baseline 2) in 1980. Under Baseline 1 conditions, subsequent to 1980, employment is forecast to increase at an annual average rate of 2.2 percent over the 1980-1994 period, while the total number of jobs are forecast to increase by 511. Baseline 2 employment is slightly higher than Baseline 1 in 1980 and experiences sharp increases between 1982 and 1986.

The average annual growth rate between 1980 and 1986 is 22.6 percent due mainly to large employment increases in the mining and construction sectors. However, under Baseline 2, between 1986 and 1988, an estimated 1,906 construction jobs will be eliminated causing a reduction in overall county employment of 11.4 percent per year, however, about 1,000 additional alunite mining jobs, projected to begin in 1988, will relieve some of the economic strain that would be created by construction layoffs. After 1988, Beaver County employment is forecast to grow very slowly at about 1.1 percent per year through 1994 under Baseline 2. The mining and energy projects would very likely induce significant stress on the county's economy as industries adjust such as local labor shortages, wage inflation, and in-migration of new workers in key occupations.

### **Population**

Under the assumption that Beaver County experiences growth in the future as it has in the past, the population can be expected to increase steadily at an average annual growth rate of 1.5 percent from 4,455 in 1980 to 5,516 in 1994. See Baseline I in Figure 1.1.13-1. On the assumption that a number of planned projects materialize, the population growth pattern will vary dramatically from that described above. See Baseline II in Figure 1.1.13-1. After 1981 the population will rise rapidly at an average annual rate of 25 percent until 1980, after which time it declines to 9,715 in 1988 and thereafter rise gradually at an average annual rate of 1.4 percent until 1994.

## **1.2 NATURAL ENVIRONMENT**

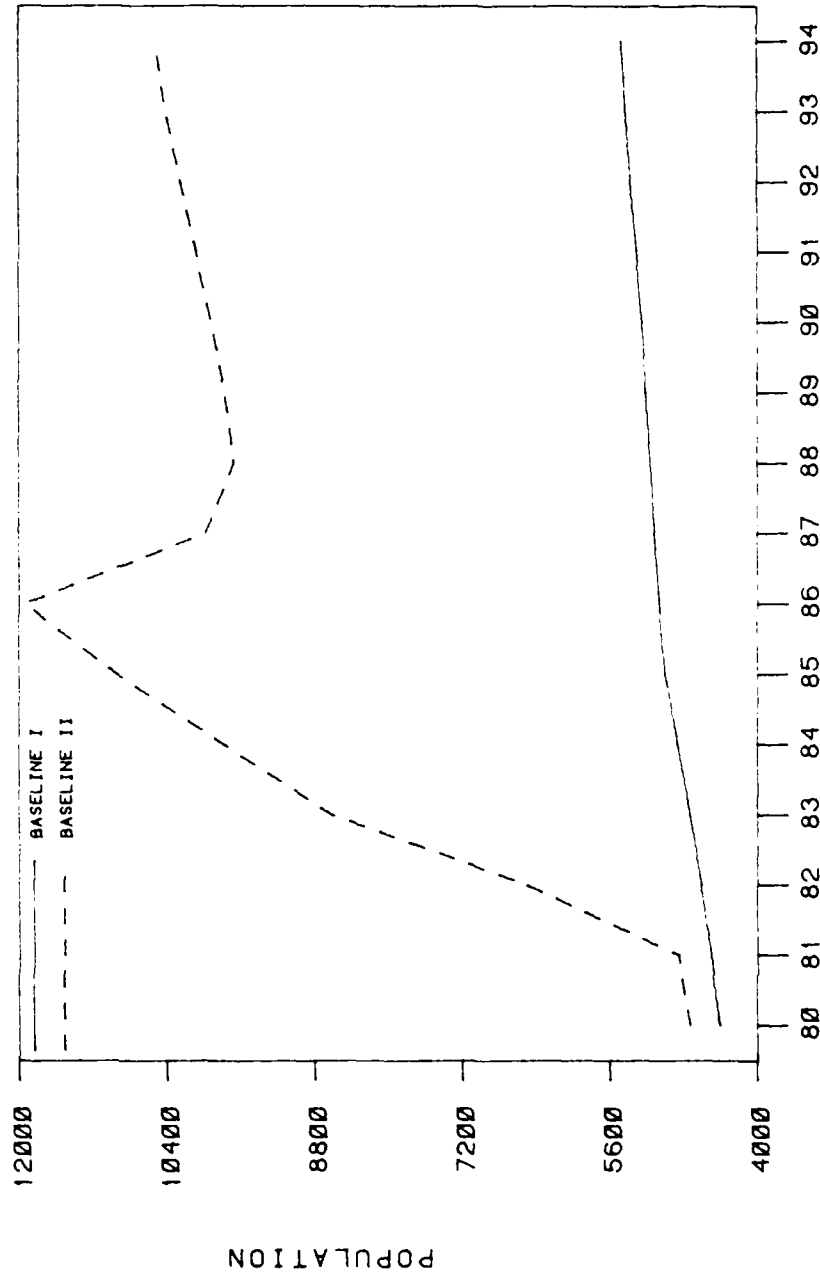
### **BIOLOGICAL RESOURCES; VEGETATION (1.2.1)**

#### **Vegetation**

Figure 1.2.1-1 shows the candidate OB location near Milford with respect to major vegetation types in the surrounding region that occupy areas large enough to be mapped at the given scale. The vegetation types occurring within the proposed site are alkali sink scrub, shadscale scrub, pinyon-juniper woodland and Great Basin sagebrush. The remainder of the valley has the above plus desert salt marsh vegetation, riparian woodland, and agricultural and/or disturbed zones. All of the vegetation types in this valley are composed of a number of identified features. The information used here is based on data acquired from the Bureau of Land Management, the U.S. Department of Agriculture (Shantz, 1940) and reconnaissance field studies conducted for this report.

The valley bottom in and around the proposed site is covered by alkali sink scrub, a vegetation type typical of heavy, saline soils. The proposed airstrip is

# POPULATION PROJECTIONS, BEAVER COUNTY, 1980-1994



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YEAR

Source: Bureau of Economic and Business Research, University of Utah, September, 1980  
 Figure 1.1.13-1. Population projections, Beaver County, 1980-1994.

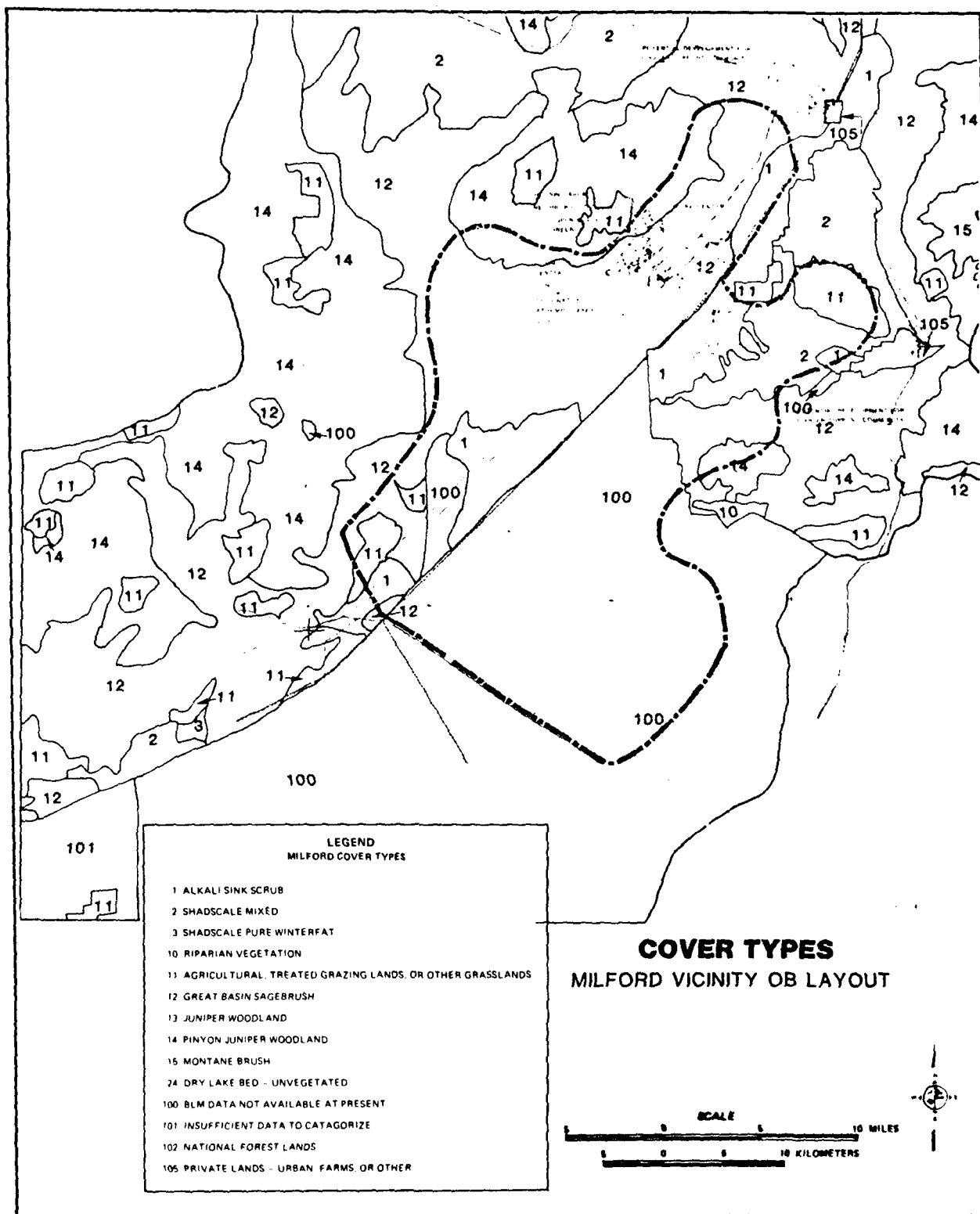


Figure 1.2.1-1. Vegetation cover types in the vicinity of Milford.

located within this vegetation type, as is approximately one quarter of the OBTS. In deeper parts of the valley bottom this low open scrub type is dominated by greasewood (Sarcobatus vermiculatus) on mounds, with saltgrass (Distichlis spicata var. stricta) and rabbitbrush (Chrysothamnus spp.) between the mounds. Covering a larger area is a transition zone of a mixture of greasewood and shadscale (Atriplex confertifolia).

Shadscale scrub is typically located above alkali sink scrub in the valley bottom. This open, low growing shrub type prefers soils of low salt content, but can tolerate saline soils. A number of shadscale vegetation subtypes may be identified within the proposed OB site and Milford Valley in general. Within the proposed OB site the dominant subtype is a widely spaced, low rabbitbrush stand, which is most abundant west of the railroad tracks and extends up to the elevation of Great Basin sagebrush. Approximately two-thirds of the proposed OB site is within this vegetation subtype.

Great Basin sagebrush, found above 5,200 ft (1,585 m) elevation, is rather limited in extent in this area. This vegetation type is typically found on deep, permeable, nonsaline soils of the alluvial fans and bajada slopes. The vegetation is fairly dense, usually one meter or less in height, with an understory of bunchgrasses and forbs. The dominant shrub is Great Basin sagebrush (Artemisia tridentata), which appears as homogenous stands in some areas of the valley and with rabbitbrush as a co-dominant in other areas. The Great Basin sagebrush of the Escalante Valley has been over-grazed in many areas to the point that the perennial herbs and grasses of the understory are almost entirely lacking. Due to a predominance of shallow soils in this region, 18 to 30 inches (45 to 76 cm), most of the Great Basin sagebrush is dwarfed in appearance.

The vegetation of Milford Valley in the northern Escalante Desert is typical of the Escalante Desert region as a whole. The U.S. Department of Agriculture information indicates that desert salt marsh vegetation occurs in at least three isolated areas south of Milford and in a larger continuous area at Beaver Bottoms, north of Milford. One of the dominant species of the Beaver Bottoms area salt marsh is tamarisk (Tamarix spp.), a large shrub to 15 ft (4.6 m) tall, with a carpet of saltgrass (Distichlis spicata var. stricta) and greasewood shrubs in the understory. The remaining areas are characterized by salt flats and poorly drained bogs. Pickleweed (Salicornia spp.) dominates the seasonally boggy zones and merges with saltgrass on the drier saltflats. This vegetation is low-growing and typically forms a dense carpet with some bare ground.

Alkali sink scrub borders the desert salt marsh vegetation along a transition zone in which some characteristic species of both vegetation types occur together. Further out of the valley bottom, alkali sink scrub is typically dominated by greasewood. The broad valley floor at the northern part of the valley has large expanses of alkali sink scrub.

Shadscale scrub is rather extensive in the northern end of the valley. This vegetation type and its associated subtypes are more extensive than any of the other vegetation types of the valley floor.

Scattered throughout the valley floor and bajadas are isolated areas dominated by bunchgrass. Based upon the configuration of the identified areas and the range

practices in this region, it is likely that these areas represent successful range conversions to introduced bunchgrass dominance.

Around Minersville and areas in the northern end of the valley, are areas dominated by annual forbs and grasses. These areas may represent range conversions or random disturbances which allow in the establishment of weedy species such as Russian thistle (Salsola iberica), cheatgrass (Bromus tectorum) and native desert forbs.

Along the Beaver River north of Minersville, are small areas of riparian woodland. This vegetation type is characterized by a sparse to moderately dense growth of small to medium-sized mesophytic deciduous trees. The dominant species are Fremont cottonwood (Populus fremontii), and several species of willow (Salix spp.).

On the upper bajadas, Great Basin sagebrush predominates as a narrow band below pinyon-juniper woodland. This vegetation type is in greatest abundance around the Milford area. The pinyon-juniper vegetation type occurs above Great Basin sagebrush as a narrow band on the east side of the valley from 6,000 ft (1,829 m) to 7,000 ft (2,134 m), and as a much broader, higher band on the west side of the valley. This woodland type is composed of small evergreen trees, of open canopy, with an understory of big sagebrush. At the lower reaches, Utah juniper (Juniperus osteosperma) dominates with a moderately dense understory of medium-sized shrubs. The dominance shifts to pinyons (Pinus monophylla) in the higher elevations, with mixed pinyon-juniper woodlands at mid-elevations.

### **Wildlife**

The proposed OB site near Milford, Utah, is directly in pronghorn antelope range. Mule deer can be found in all the mountains in this area, although numbers are presently low. Ten to fifteen miles to the east is Minersville Lake State Park, which is a major waterfowl area in the West Desert.

### **Aquatic Species**

No game fishing opportunities are present in the Milford Watershed. However, the adjacent Beaver Watershed has game fish habitats in the Beaver River drainage and Rockyford Reservoir. This drainage is from 10 to 30 miles southeast of Milford. The upper reaches of the Sevier River are 50 miles (80 km) or more eastward. These would provide significant game fishing opportunities.

### **Protected Species**

A bald eagle roost site is located a few miles east of Minersville Lake State Park in the Black Mountains, and one is known in Wah Wah Valley. The approach departure corridor near Milford goes through the Bald Eagle habitat area, making it unusable for the birds, to a major transplant site of the federally listed endangered Utah prairie dog, located in Pine Valley.

No protected or recommended protected aquatic biota occur within 30 miles of this potential OB siting location.

Two plant species which are recommended for threatened status are found just north of Milford. They are the dwarf beard-tongue (Penstemon nanus) and the tufted globe-mallow (Sphaeralcea caespitosa). Two populations of the Tunnel Springs beard-tongue (Penstemon concinnus) lie approximately 10 mi to the west of the road to the designated deployment area and operational base test site. One population of rare cactus (Sclerocactus pubispinus) lies adjacent to Highway 21, about 20 mi north of the layout. It is found in association with 6 other rare plant species which are limited to the soils of the Sevy Dolomite Formation found in this area. The Tunnel Springs beardtongue has a high possibility of being federally listed in the near future and the cactus is recommended for endangered status by authorities in Nevada/Utah.

### **Wilderness and Significant Natural Areas**

Recommended designated wilderness study areas and significant natural areas located within a 50 mi radius of the potential Milford OB site are listed in Table 1.2.1-1.

### **SURFACE WATER - MILFORD (1.2.2)**

#### **Source**

The principal source of surface water in the vicinity of Milford is the Beaver River and essentially all its water originates outside the valley. The 1914-71 average annual inflow to the Milford area was  $34.0 \text{ m}^3/\text{h}$ . Other streams in the Milford area are ephemeral and flow only in direct response to snowmelt and intense rainstorms.

Most of the precipitation within the area is lost by direct evaporation, by restoration of soil moisture that is later transpired by vegetation or evaporation to the atmosphere, and by runoff in surface streams which seldom reach the valley floor. The mean annual runoff from the entire surrounding mountain area (approximately  $810 \text{ mi}^2$ ) is about  $29.6 \text{ hm}^3$ .

#### **Streams and Canals**

The Beaver River enters through a canyon just east of Minersville (a town located approximately 12 mi southeast of Milford). However, the river channel is generally dry before it reaches Milford because the streamflow is diverted. The generally dry channel extends northward from Milford to a stream gap about 24 mi north of Milford where it leaves the valley.

In addition to the river, two ephemeral tributaries enter the area an unnamed stream at the southeast and Cove Creek in the northeast. Only rarely do any of the ephemeral flows reach the lower parts of the valley, and only negligible amounts flow out of the valley in the Beaver River channel.

About 5 mi east of Minersville, all the flow of the Beaver River is diverted to the Minersville and low line Canals and the Utopia Ditch for irrigation in the area between Minersville and Milford.

Table 1.2.1-1. Potential wilderness and significant natural areas within a 50 mile radius of Milford OB site.

POTENTIAL WILDERNESS AREAS	
AREA	MILES FROM OB SITE
White Rock Range	43
Wah Wah Mountains	30
Wah Wah Mountains	35
Cedar Breaks National Monument	40
Cedar Breaks	38
Spring Canyon	48
Taylor Creek Canyon	50
La Verkin Creek Canyon	50
King Top	48
SIGNIFICANT NATURAL AREAS	
Steamboat Mountain	25
Indian Peak Wildlife Management Area	29
Gleason Canyon	50
Cedar Breaks	40
Deer Habitat Management Area	31

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## **Lakes and Reservoirs**

Rocky Ford Dam controls the flow of the Beaver River and impounds water in the Minersville Reservoir at the head of the Beaver River Canyon, about 8 km east of Minersville.

## **Springs**

Of at least 33 springs in the Milford area, the only spring discharging from the principal groundwater reservoir during 1970-71 is Thermo Hot Springs; the average annual quantity is  $4.2 \times 10^4 \text{ ft}^3$ . Although no cold-water springs discharged from the principal groundwater reservoir in the Milford area in 1972, it is estimated that before extensive use of wells, discharge was near  $.18 \text{ m}^3/\text{hr}$  per year.

## **Drainage**

The Milford area is drained by the Beaver River and numerous ephemeral tributaries. This system is part of the larger Sevier River drainage that terminates at Sevier Lake.

## **Current Use**

Streamflow from the Beaver River is diverted below Minersville (before it reaches Milford) for irrigation during the growing season and for stock watering during the non-growing season.

The small amount of runoff in ephemeral streams has not warranted impoundment of distribution facilities except for a few small stockponds and flood control structures near Milford and Minersville. These small structures do not regularly augment the water supply in the valley. Occasionally, water from flood control structures is used for irrigation.

## **GROUNDWATER - MILFORD (1.2.3)**

The Milford OB site is located in the Milford hydrological unit in the northern portion of the Escalante Desert. The area is flanked in the north by the Cricket Mountains, to the south by the Black Mountain Range, bounded in the west by the Shauntie Hills, Star Range and Beaver Lake Mountains and by the Mineral Mountains in the east. Groundwater recharge results from seepage of intermittent stream flow from the surrounding mountains and foothills as well as infiltration from irrigation ditches and fields. The principal drainage is to the north near Black Rock, but little groundwater makes it that far; it is pumped from wells for irrigation needs along the way. There are southerly and southeasterly drainages from the Shauntie Hills and Star Range.

Annual recharge is estimated to be 58,000 AF/yr (AF/yr = acre feet/year). Annual discharge from wells in 1970 and 1971 was 56 KAFY (Mower and Cordova 1974) and is currently estimated to be 65 KAFY, of which 98 percent is used for irrigation (Fugro, 1980). An additional 24 KAFY is lost to evapotranspiration. The annual discharge of 81 KAFY exceeds perennial yield, the system, therefore, is in overdraft and the level of the water table is decreasing. Mower and Cordova (1974) report a 30 ft decline in water level from 1950 to 1974. No water is currently available in the area and the Utah State engineer is not approving new appropriation applications.



#### **SOILS/SLOPE (1.2.4)**

Several soil associations are present southwest of Milford in the area being considered as a potential OB site. A predominant association is made up of Aridisols and found on valley bottoms and floodplains: the Typic Natrargids - Xerollic Natrargids - Typic Calciorthids association (Wilson, et al., March 1975). This association consists primarily of deep, moderately to very strongly alkaline soils. The surface layers are loams, silt loams, and silty clay loams, while the subsoils are fines and fine loamy. Permeability is moderately slow to very slow and slopes are smooth to gently undulating (from less than 1 percent up to 3 percent).

On the alluvial fans and low terraces, two soil associations are present which are made up of soils from the Aridisols and Entisols orders: the Xerollic Calciorthid - Xeric Torriofluvent association and the Typic Torriofluvent - Typic Torriorthent association. These soils are deep and mildly to strongly alkaline. The surface layers are loams, silt loams and sandy loams while the subsoils are loamy skeletal, fine loamy, fine silty and sandy. Slopes range from smooth to gently undulating to rolling (from less than 1 percent to nearly 30 percent).

#### **Seismicity**

Seismicity ranges from moderate to moderately severe in the Milford siting area, which is located within the Intermountain seismic belt, and is associated with the Hurricane/Wasatch Fault seismic system. This belt is the locus of frequent historic small to moderate earthquakes, although larger quakes are suggested from the geologic record.

#### **AIR QUALITY (1.2.5)**

Milford, Utah is in the center of Beaver County in the southwestern portion of the state. Particulate emissions, excluding windblown sources, are reported as 2088 tons/yr (1894 tonnes/yr) and gaseous emissions are relatively low (see Table 1.2.5-1).

No air quality monitoring data exists for this site. Existing and proposed Class I areas within 100 mi of Milford are Zion National Park (existing), Bryce Canyon National Park (existing), and Cedar Breaks National Monument (recommended for redesignation to Class I status).

#### **Climatology**

Mean annual precipitation is .3 in. less than Beryl (8 in.). Visibility is excellent, with a mean annual range of 70 miles. Average annual wind speeds are 4.0 mps in the morning and 6.0 mps in the afternoon.

Table 1.2.5-1. Total emissions and emission density levels of alternative potential OB locations.

EMISSIONS/ EMISION DENSITY LEVEL <sup>a</sup>	POTENTIAL EMISSION DENSITY LEVELS <sup>b</sup>					
	FLY, NEWADA <sup>c</sup>	FLY, TEXAS <sup>d</sup>	FLY, CALIF. <sup>e</sup>	FLY, ARIZ. <sup>f</sup>	FLY, NEV. <sup>g</sup>	FLY, NEW MEXICO <sup>h</sup>
Total Particulate Emissions Tons/yr	72,666	133,363	133,363	133,363	133,363	28,876
Particulate Density Tons/yr/mi <sup>2</sup>	37.4	175.9	175.9	175.9	175.9	1<10
Total SO <sub>x</sub> Emissions Tons/yr	274,426	33,363 274,426	33,363 274,426	33,363 274,426	33,363 274,426	138,083
SO <sub>x</sub> Density Tons/yr/mi <sup>2</sup>	10<100	9.1<10	9.1<10	9.1<10	9.1<10	<1
Total NO <sub>x</sub> Emissions Tons/yr	12,641	12,641-96,378	12,641-96,378	12,641-96,378	12,641-96,378	29,202
NO <sub>x</sub> Density Tons/yr/mi <sup>2</sup>	<3	0.1<30	0.1<30	0.1<30	0.1<30	<3
Total Hydrocarbon Emissions Tons/yr	15,673	15,673-23,971	15,673-23,971	15,673-23,971	15,673-23,971	38,471
Hydrocarbon Density Tons/yr/mi <sup>2</sup>	<3	0.1<10	0.1<10	0.1<10	0.1<10	<3
Total CO Emissions Tons/yr	79,896	79,896-131,010	79,896-131,010	79,896-131,010	79,896-131,010	112,916
CO Density Tons/yr/mi <sup>2</sup>	<10	9.1<30	9.1<30	9.1<30	9.1<30	10<30

<sup>a</sup> Particulate data are latest data available from State of Nevada (year unspecified). Particulate data are reported on hydrographic sub-basin basis. Particulate data include additional fugitive dust from the Nevada State Air Pollution Control Board (NSAPCB) and FFA Emissions Trends Report (1977).

<sup>b</sup> Emission density levels of each potential location are given as range using data from both ACPRS.

<sup>c</sup> Particulate and Sulfur dioxide levels reported by county from state of Nevada (1976 data). Particulate data do not include contribution from windblown fugitive dust sources. Density values from FFA Emissions Trends Report (1977).

<sup>d</sup> Particulate and Sulfur dioxide levels reported for Arizona (1977) from BEHS (1977). Density values from FFA Emissions Trends Report (1977).

<sup>e</sup> Particulate and Sulfur dioxide levels reported for California (1976) from BEHS (1976). Density values from FFA Emissions Trends Report (1977).

As a result, the number of employees in the construction industry is expected to decline by 1.2 million between 2000 and 2010, or 1.2 percent of the total workforce. The decline is expected to be most pronounced in the construction of new buildings, which is expected to decline by 1.1 million jobs, or 1.1 percent of the total workforce. The decline in construction jobs is expected to be offset by an increase in jobs in the manufacturing and service sectors, which are expected to increase by 1.2 million jobs, or 1.2 percent of the total workforce. The overall decline in construction jobs is expected to be offset by an increase in jobs in the manufacturing and service sectors, which are expected to increase by 1.2 million jobs, or 1.2 percent of the total workforce.

Table 2.1.1-1. M-X related system employment by place of employment, in Beaver.

PROPOSED ACTION: FULL DEPLOYMENT - NEVADA/UTAH  
 BASE I AT COYOTE SPRINGS, NV (CLARK CO.)  
 BASE II AT MILFORD, UT (BEAVER CO.)

TYPE OF EMPLOYMENT	NUMBER OF JOBS												
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TECHNICAL FACILITIES													
CONSTRUCTION	0	0	200	1250	1450	350	0	0	0	0	0	0	0
ASSEMBLY + CONSTRUC.	0	0	10	200	350	80	0	0	0	0	0	0	0
BASE													
CONSTRUCTION	0	0	0	200	1250	2050	1450	750	0	0	0	0	0
ASSEMBLY AND CHECKOUT	0	0	0	0	0	0	0	0	0	0	0	0	0
OPERATIONS													
OFFICERS	0	0	0	0	100	200	350	450	450	450	450	450	450
ENLISTED PERSONNEL	0	0	0	0	1100	2200	3250	4400	4400	4400	4400	4400	4400
CIVILIANS	0	0	0	0	200	400	450	850	850	850	850	850	850
TOTAL DIRECT	0	0	210	1650	4740	5280	5700	6450	5700	5700	5700	5700	5700
INDIRECT	0	0	485	1597	2603	3142	3433	3039	2119	931	649	440	440
TOTAL	0	0	695	3247	7343	8942	9233	9209	7819	6631	6349	6340	6340

SOURCE: MOR SCIENCES, 31-OCT-80

Table 2.1.1-2. M-X related system employment by place of employment, in Beaver.

ALTERNATIVE 5, FULL DEPLOYMENT - NEVADA/UTAH  
 BASE I AT MILFORD, UT (BEAVER CO.)  
 BASE II AT ELY, NV (WHITE PINE CO.)

TYPE OF EMPLOYMENT	NUMBER OF JOBS												
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TECHNICAL FACILITIES													
CONSTRUCTION	0	0	200	1350	1650	350	0	0	0	0	0	0	0
ASSEMBLY + CONSTRUC.	0	0	10	280	360	80	0	0	0	0	0	0	0
BASE													
CONSTRUCTION	1150	1900	2300	2000	1200	0	0	0	0	0	0	0	0
ASSEMBLY AND CHECKOUT	0	350	900	1800	2850	2850	2800	2650	50	0	0	0	0
OPERATIONS													
OFFICERS	0	0	100	200	300	400	500	600	600	600	600	600	600
ENLISTED PERSONNEL	0	0	950	1925	2900	3850	4800	5750	5750	5750	5750	5750	5750
CIVILIANS	0	0	200	375	550	750	950	1150	1150	1150	1150	1150	1150
TOTAL DIRECT	1150	2250	4660	7925	9810	8200	9050	10150	7550	7500	7500	7500	7500
INDIRECT	905	2246	3593	4921	4880	3987	3206	1780	992	851	845	845	845
TOTAL	2055	4496	8253	12831	14690	12287	12256	11930	8542	8351	8345	8345	8345

SOURCE: MOR SCIENCES, 31-OCT-80

Table 2.1.1-2 indicates that peak total employment by place of work could reach 14,700 jobs in 1986, almost seven times the trend growth employment projections of 2,200 jobs, and almost 300 percent of 5,200 jobs under Baseline 2 in 1986 (see Tables 4.2.2.1-9 and 4.2.2.1-10). A more important measure of local economic impacts is derived by adjusting employment by place of work to place of residence; this accounts for cross-county commuting. In the case of Beaver County, the figure of 14,700 jobs given above, adjusts downward to 13,600, indicating roughly 1,000 workers employed in the county would live elsewhere, particularly in Iron County. Table 2.1.1-2 indicates that total employment by place of work stabilizes at about 8,300 jobs by 1992, roughly 350 percent of trend growth employment levels in that year, and 180 percent of projected total employment of 4,500 total jobs projected under Baseline 2 (Table 4.2.2.1-9 and 4.2.2.1-10). In the long run, forecasts indicate that virtually all workers would reside within Beaver County. By comparison, location of a second operating base in the county would induce long run employment growth of 6,300 jobs.

Historically, the county has grown very slowly, with only a 0.6 percent annual employment growth rate recorded for the 1967-1977 period. The county as a whole would experience severe boom-type growth given the projected rapid build-up of employment from M-X under virtually all alternatives.

Milford and Beaver are the largest communities in the county. Both would experience skilled labor shortages, general wage inflation, increased land values, and a large in-migration of project workers. This in-migration initially would be comprised of construction workers, but as the location of an operating base, over the long run, much of the employment growth would consist of military personnel. Significant employment growth spillovers from base operations also would be likely for Cedar City, located in Iron County.

### **Labor Force Impacts**

County labor markets would be significantly affected; skilled labor would be in very short supply, particularly in the project's early years. Due to shortage of locally available workers as well as relatively higher wages on M-X-related jobs, a significant amount of labor in-migration would occur. Tables 2.1.1-3 and 2.1.1-4 present labor in-migration estimates for the Proposed Action, while Tables 2.1.1-5 and 2.1.1-6 present comparable figures for Alternative 5. Differences in these two sets of tables result from the relatively larger employment requirements to construct and operate a first operating base. These in-migration figures are very important since they form the basis for almost all population growth (excluding military) which in turn, drives impacts upon local infrastructure, a key determinant of impact analyses. Total civilian M-X-related employment represents direct and indirect civilian labor demand, adjusted to employment by place of residence. This figure peaks at 10,700 persons in 1986 for the first operating base (Tables 2.1.1-5 and 2.1.1-6). In the same year, the county's available resident labor force is forecast to range from 100-200 persons, depending upon the level of growth forecast in the county. The "net civilian labor force impact" row compares the expected available labor pool in Beaver County with M-X civilian labor demands. It represents the cumulative total of civilian workers expected to in-migrate into the county up to a given year. For example, up to and including 1986, Table 2.1.1-5 indicates that 10,999 workers are expected to in-migrate into the county, but as job opportunities diminish, out-migration will take place; "net civilian labor force

Table 2.1.1-3. Total civilian M-X related employment, available resident labor force, and net civilian labor force impact by place of residence for Beaver.

PROPOSED ACTION: FULL DEPLOYMENT - NEVADA/UTAH (L) BASE I AT COYOTE SPRINGS, NV (CLARK CO.) BASE II AT HILFORD, UT (BEAVER CO.)													
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TOTAL CIVILIAN M-E-RELATED EMPLOYMENT	0	0	470	2920	3393	3873	3370	4401	2880	1476	1414	1403	1403
AVAILABLE RESIDENT LABOR FORCE	71	73	75	77	78	79	74	80	81	81	82	82	84
NET CIVILIAN LABOR FORCE IMPACT	0	0	423	2961	3324	3984	3431	4434	2910	2189	2189	2189	2188
SOURCE: HON SCIENCES, 31-OCT-80													

Table 2.1.1-4. Total civilian M-X related employment available resident labor force, and net civilian labor force impact by place of residence for Beaver.

PROPOSED ACTION: FULL DEPLOYMENT - NEVADA/UTAH BASE I AT COYOTE SPRINGS, NV (CLARK CO.) BASE II AT MILFORD, UT (BEAVER CO.)													
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TOTAL CIVILIAN M-E-RELATED EMPLOYMENT	0	0	470	2920	3393	3879	3370	4401	2880	1476	1414	1403	1403
AVAILABLE RESIDENT LABOR FORCE	100	132	180	167	102	152	148	149	182	184	187	157	161
NET CIVILIAN LABOR FORCE IMPACT	0	0	362	2807	3416	3909	3300	4303	2039	2164	2163	2144	2144
SOURCE: HON SCIENCES, 31-OCT-80													

Table 2.1.1-6. Total civilian M-X related employment, available resident labor force, and net civilian labor force impact by place of residence for Beaver.

ALTERNATIVE 3: FULL DEPLOYMENT - NEVADA/UTAH (LI) BASE I AT MILFORD, UT (BEAVER CO.) BASE II AT ELY, NV (WHITE PINE CO.)													
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TOTAL CIVILIAN M-X-RELATED EMPLOYMENT	1710	3926	6471	9840	10720	7930	6996	5318	2077	1884	1880	1880	1880
AVAILABLE RESIDENT LABOR FORCE	71	73	75	77	78	79	79	80	81	81	82	83	84
NET CIVILIAN LABOR FORCE IMPACT	1720	3978	6564	10011	10888	7954	7022	5618	2978	2928	2927	2927	2927
SOURCE: NDR SCIENCES, 31-OCT-80													

Table 2.1.1-6. Total civilian M-X related employment, available resident labor force, and net civilian labor force impact by place of residence for Beaver.

ALTERNATIVE 3: FULL DEPLOYMENT - NEVADA/UTAH BASE I AT MILFORD, UT (BEAVER CO.) BASE II AT ELY, NV (WHITE PINE CO.)													
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TOTAL CIVILIAN M-I-RELATED EMPLOYMENT	1710	3926	6471	9840	10720	7930	6996	5318	2077	1886	1880	1880	1880
AVAILABLE RESIDENT LABOR FORCE	100	132	150	167	182	192	148	149	152	154	157	159	161
NET CIVILIAN LABOR FORCE IMPACT	1696	3930	6487	9918	10780	7877	6951	5367	2935	2904	2904	2903	2902
SOURCE: NDR SCIENCES, 31-OCT-80													

impacts" decline after 1986. This figure stabilizes at 2,900 persons in 1991 for both baselines given Tables 2.1.1-5 and 2.1.1-6. Hence, deployment of a first operating base in the county will induce a total of about 2,900 civilian workers to in-migrate into Beaver County. This figure declines to 2,100 persons if a second operating base is sited in the county. Following peak in-migration, some boom-growth stress will be reduced; wage-price inflation could abate and unemployment rates could rise. Occupational transition would begin out of boom industries such as construction, and into services and trade industries, where long run economic expansion in the county would be centered.

### **EFFECTS ON INCOME AND EARNINGS (2.1.2)**

Earnings impacts in Beaver County are closely related to employment effects which were discussed in Section 2.11. Milford in Beaver County, Utah would experience impacts under the Proposed Action and Alternatives 5 and 6. Under Alternatives 5 and 6 Milford would be the site of the first operating base, and under the Proposed Action it would be the location of the second operating base. Under all deployment options the county would be the site of DDA construction and its associated short-term activity.

Under the Proposed Action, Milford would be the location of the second base and DDA cluster facilities. The impacts such M-X activity would have on county earnings are shown in Table 2.1.2-1. Peak earnings occur in 1987 at \$168 million with a long-term impact of \$86 million. Both these levels represent significant increases over present levels: eight and four times the 1978 level of \$21 million (1980 dollars) respectively.

The largest impacts are experienced under Alternatives 5 and 6 (see Tables 2.1.2-2 and 2.1.2-3) and are identical. Total M-X-related earnings would peak in 1986 at \$291 million and long term earnings would stabilize at around \$114 million by 1990-1991. Such increases are substantial, representing 14 and 5.4 times, respectively, of the 1978 countywide total earnings. (1980 dollars).

The largest component of increased earnings under Alternatives 5 and 6 is contributed by base construction in the peak year (38 percent), followed by cluster facilities construction (22 percent), and indirect economic activity (22 percent). In the long-term, however, the base operations-derived earnings comprise the vast majority of total M-X-related earnings (90 percent).

Compared to 1978 earnings of \$21,000,000 (1980 dollars), earnings growth in the county would be extremely large. Under all 3 base siting options, earnings growth in the county would be extremely large. Further, these impacts would occur in a county characterized by very slow historic earnings growth in real earnings, 0.5 percent per year over the 1967-1977 period, and in one with a 1978 per capita income of \$5,590, low even for a state characterized by agriculturally-based economies. Very significant growth problems in the county are likely with such a large infusion of money over a short period of time. Significant increases in local land values and earnings in non-M-X sectors are likely, as are temporary shortages of some goods, services, and skilled construction labor.

### **EFFECTS ON PUBLIC FINANCE (2.1.3)**

This section presents the aggregate expenditure, revenue, and net impact levels estimated for all local governments in Beaver County. Peak year and long-term capital expenditure requirements also are presented. The effects discussed



Table 2.1.2-1. M-X related earnings, in millions of FY 1980 dollars, in Beaver.

PROPOSED ACTION: FULL DEPLOYMENT - NEVADA/UTAH  
 BASE I AT COYOTE SPRINGS, NV ICLARA CO. I  
 BASE II AT MILFORD, UT (BEAVER CO. I)

SOURCE OF EARNINGS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
CLUSTER FACILITIES CONSTRUCTION, ASSEMBLY, AND CHECKOUT	0.0	0.0	7.0	52.4	44.4	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE CONSTRUCTION, ASSEMBLY, AND CHECKOUT	0.0	0.0	0.0	6.7	43.4	48.9	48.7	23.2	0.0	0.0	0.0	0.0	0.0
OPERATIONS	0.0	0.0	0.0	0.0	19.1	38.1	58.9	78.9	78.9	78.9	78.9	78.9	78.9
INDIRECT	0.0	0.0	4.2	18.2	33.8	47.6	47.3	39.8	27.3	12.1	8.4	8.3	8.3
TOTAL	0.0	0.0	13.2	77.2	142.7	148.4	156.9	142.9	106.0	90.6	87.0	86.8	86.8

SOURCE: MOR SCIENCES, 31-OCT-80

Table 2.1.2-2. M-X related earnings, in millions of FY 1980 dollars, in Beaver.

ALTERNATIVE B: FULL DEPLOYMENT - NEVADA/UTAH  
BASE I AT MILFORD, UT (BEAVER CO.)  
BASE II AT ELY, NV (WHITE PINE CO.)

SOURCE OF EARNINGS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
CLUSTER FACILITIES CONSTRUCTION, ASSEMBLY, AND CHECKOUT	0.0	0.0	7.0	52.4	44.4	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE CONSTRUCTION, ASSEMBLY, AND CHECKOUT	38.6	72.6	99.8	112.2	111.4	71.3	70.0	46.3	1.3	0.0	0.0	0.0	0.0
OPERATIONS	0.0	0.0	17.4	34.8	31.4	69.0	86.3	103.7	103.7	103.7	103.7	103.7	103.7
INDIRECT	11.8	29.2	46.7	44.0	43.4	51.8	41.7	23.1	12.9	11.1	11.0	11.0	11.0
TOTAL	50.4	101.8	170.8	243.0	291.1	203.8	198.0	192.1	117.8	114.8	114.7	114.7	114.7

SOURCE: MOR SCIENCES, 31-OCT-80

Table 2.1.2-3. M-X related earnings, in millions of FY 1980 dollars, in Beaver.

ALTERNATIVE A: FULL DEPLOYMENT - NEVADA/UTAH  
BASE I AT MILFORD, UT (BEAVER CO.)  
BASE II AT COVOTE SPRINGS, NV (CLARK CO.)

SOURCE OF EARNINGS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
CLUSTER FACILITIES CONSTRUCTION, ASSEMBLY, AND CHECKOUT	0.0	0.0	7.0	52.4	44.4	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BASE CONSTRUCTION, ASSEMBLY, AND CHECKOUT	38.6	72.6	99.8	112.2	111.4	71.3	70.0	46.3	1.3	0.0	0.0	0.0	0.0
OPERATIONS	0.0	0.0	17.4	34.3	31.4	69.0	86.3	103.7	103.7	103.7	103.7	103.7	103.7
INDIRECT	11.8	29.2	46.7	44.0	43.4	51.8	41.7	23.1	12.9	11.1	11.0	11.0	11.0
TOTAL	50.4	101.8	170.8	243.0	291.1	203.8	198.0	192.1	117.8	114.8	114.7	114.7	114.7

SOURCE: MOR SCIENCES, 31-OCT-80

reflect aggregate estimates and cannot be interpreted as estimates associated with a specific jurisdiction. Effects specific to the local school district constitute a major portion of the aggregate effects and are discussed separately.

The net fiscal effects in the Beaver County area are greatest under Alternatives 5 and 6 where OBI are proposed for the area. Peak year deficits (1985) of approximately \$2.3 million are anticipated under both alternatives (Table 2.1.3-1). This represents approximately 11.7 percent of the total expenditure levels anticipated during this year. Under the Proposed Action where a smaller second operating base is proposed for the area, deficits are slightly less (\$1.9 million) and occur one year later in 1986. Under alternatives where only DDA facilities are proposed, impacts are substantially less, approximately \$700,000 during the years 1985-1987 (9-11 percent of the total expenditures estimated during these years). These deficits could result in serious service level degradation, particularly in the early years of the project, unless substantial outside aid and/or mitigative measures are available. No significant adverse effects are anticipated in the long-term under any of the alternatives. Although deficits are registered in the long-term under most of the alternatives, they account for only 1.6-1.7 percent of the total expenditures anticipated during the 1994 period and represent no significant adverse impacts.

Effects on the education system in the county follow a similar pattern. Largest effects are anticipated under Alternatives 5 and 6 where OBI are proposed for the area. Deficits of approximately \$500,000 are estimated in the first two years of the project (Table 2.1.3-2). This situation can seriously affect the provision of education services in the areas unless immediate aid is made available to the local schools. Under the remaining alternatives increases in pupil loads are not as dramatic as under Alternatives 5 and 6. However, peak year deficits ranging from approximately \$300,000 under Alternatives 3, 4, and 8a to \$600,000 under the Proposed Action are anticipated during the years 1985-1987. These effects also will have the potential for serious service level degradation unless mitigative measures and/or outside aid are not made available.

Total long-term capital expenditures under both Alternatives 5 and 6 amount to approximately \$32.9 million. Under the Proposed Action total capital outlays of \$24.9 million approximately 25 percent less than the requirements under Alternatives 3 and 5 for the long-term, are anticipated. Under all alternatives where operating bases are proposed, school expenditures account for 67 percent of total capital outlays. Under the remaining alternatives, substantially less capital expenditures for both the long-term and peak year are required (Table 2.1.3-3).

Tables 2.1.3-4 through 2.1.3-6 present the results for the above analyses, assuming the high baseline population.

The level of capital expenditures requirements estimated in the Beaver County area when compared to the reserved bonding capacities of the various jurisdictions indicates the relative inability of the local jurisdictions to finance the projects necessary to support these levels of infrastructure growth. The Proposed Action and Alternatives 5 and 6 present situations where the amount of capital expenditure exceed the reserved bonding capacity. The relatively low tax base in the Beaver County area will present any local financing of large scale infrastructure facilities. The importance of having the infrastructure facilities operative before the

Table 2.1.3-1. Local government revenues, expenditures, and net impacts (thousands FY 1980 \$) (1)  
Baseline: Low - County: Beaver. (page 1 of 2).

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>PROPOSED ACTION</b>													
REVENUES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPENDITURES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MX INDUCED													
NET IMPACT	0	0	-407	-1293	-1866	-1352	-374	-91	431	208	-227	227	-227
<b>ALTERNATIVE 1</b>													
REVENUES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPENDITURES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MX INDUCED													
NET IMPACT	0	0	-112	-717	-449	208	-37	-24	41	-24	-37	38	-37
<b>ALTERNATIVE 2</b>													
REVENUES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPENDITURES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MX INDUCED													
NET IMPACT	0	0	-112	-717	-449	208	-37	-24	41	-24	-37	38	-37
<b>ALTERNATIVE 3</b>													
REVENUES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPENDITURES													
WITHOUT MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
WITH MX	4012	4115	4230	4350	4406	4445	4485	4525	4562	4614	4666	4712	4751
DIFFERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0
PCT DIFF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MX INDUCED													
NET IMPACT	0	0	-112	-717	-449	208	-37	-24	41	-24	-37	38	-37

Table 2.1.3-1. Local government revenues, expenditures, and net impacts (thousands FY 1980 \$) (1)  
 Baseline: Low - County: Beaver, (page 2 of 2).

ALTERNATIVE 4 REVENUES WITHOUT MI WITH MI DIFFERENCE EXPENDITURES WITHOUT MI WITH MI DIFFERENCE PCT DIFF NET IMPACT	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
ALTERNATIVE 5 REVENUES WITHOUT MI WITH MI DIFFERENCE EXPENDITURES WITHOUT MI WITH MI DIFFERENCE PCT DIFF NET IMPACT	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
ALTERNATIVE 6 REVENUES WITHOUT MI WITH MI DIFFERENCE EXPENDITURES WITHOUT MI WITH MI DIFFERENCE PCT DIFF NET IMPACT	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
ALTERNATIVE 8A REVENUES WITHOUT MI WITH MI DIFFERENCE EXPENDITURES WITHOUT MI WITH MI DIFFERENCE PCT DIFF NET IMPACT	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751
	4012	4115	4230	4350	4406	4445	4489	4525	4562	4614	4666	4712	4751

SOURCE: HNS SCIENCES  
 (1) ESTIMATES REFLECT AGGREGATE REVENUES AND EXPENDITURES FOR ALL LOCAL GOVERNMENTAL UNITS IDENTIFIED. CITIES, SCHOLLS  
 DISTRICTS, SPECIAL DISTRICTS) WITHIN THE COUNTY.



Table 2.1.3-2. School district revenues, expenditures, and net impacts (thousands FY 1980 \$) (1)  
 Baseline: Low - County: Beaver. (page 2 of 2).

ALTERNATIVE 4														
REVENUES	2477	2541	2612	2686	2720	2744	2769	2794	2817	2847	2881	2909	2933	2933
WITHOUT MX	2531	2712	3123	4221	4953	4352	3900	3864	3766	3680	3611	3711	3734	3734
WITH MX	34	171	511	1515	2215	1607	1070	949	831	709	601	801	801	801
DIFFERENCE	2 20	6 74	19 57	57 16	82 15	56 57	40 84	38 30	33 68	29 17	27 91	27 55	27 31	27 31
PCT DIFF														
EXPENDITURES	2497	2562	2633	2708	2742	2767	2792	2817	2840	2872	2904	2933	2957	2957
WITHOUT MX	2500	2772	3230	4328	4961	3881	3751	3749	3588	3473	3401	3630	3634	3634
WITH MX	82	210	617	1848	2219	1113	959	932	791	701	697	697	697	697
DIFFERENCE	3 30	8 21	23 42	68 22	80 91	40 24	34 35	33 09	26 36	24 41	24 00	23 76	23 57	23 57
PCT DIFF														
MX INDUCED														
NET IMPACT	-28	-39	-104	312	16	494	172	138	200	130	107	104	104	104
ALTERNATIVE 5														
REVENUES	2477	2541	2612	2686	2720	2744	2769	2794	2817	2847	2881	2909	2933	2933
WITHOUT MX	3546	3408	8670	12228	14267	13701	13536	13769	13216	13233	13265	13293	13316	13316
WITH MX	1069	2867	6098	9342	11547	10937	10767	10975	10399	10384	10384	10384	10384	10384
DIFFERENCE	43 16	112 83	231 99	355 26	424 51	399 23	388 86	392 81	369 17	364 52	360 48	360 48	360 48	360 48
PCT DIFF														
EXPENDITURES	2497	2562	2633	2708	2742	2767	2792	2817	2840	2872	2904	2933	2957	2957
WITHOUT MX	4108	3917	9079	13529	15800	12938	12938	12938	12938	13011	13043	13074	13094	13094
WITH MX	1610	3335	6446	9821	10838	9331	10046	10178	10139	10137	10137	10137	10137	10137
DIFFERENCE	64 49	130 56	244 81	362 67	395 20	344 43	339 86	361 32	357 01	353 01	349 10	349 10	349 10	349 10
PCT DIFF														
MX INDUCED														
NET IMPACT	-541	-488	-387	-279	709	1426	721	797	260	245	245	247	247	247
ALTERNATIVE 6														
REVENUES	2477	2541	2612	2686	2720	2744	2769	2794	2817	2847	2881	2909	2933	2933
WITHOUT MX	3546	3408	8670	12228	14267	13701	13536	13769	13216	13233	13265	13293	13316	13316
WITH MX	1069	2867	6098	9342	11547	10937	10767	10975	10399	10384	10384	10384	10384	10384
DIFFERENCE	43 16	112 83	231 99	355 26	424 51	399 23	388 86	392 81	369 17	364 52	360 48	360 48	360 48	360 48
PCT DIFF														
EXPENDITURES	2497	2562	2633	2708	2742	2767	2792	2817	2840	2872	2904	2933	2957	2957
WITHOUT MX	4108	3917	9079	13529	15800	12938	12938	12938	12938	13011	13043	13074	13094	13094
WITH MX	1610	3335	6446	9821	10838	9331	10046	10178	10139	10137	10137	10137	10137	10137
DIFFERENCE	64 49	130 56	244 81	362 67	395 20	344 43	339 86	361 32	357 01	353 01	349 10	349 10	349 10	349 10
PCT DIFF														
MX INDUCED														
NET IMPACT	-541	-488	-387	-279	709	1426	721	797	260	245	245	247	247	247
ALTERNATIVE 8A														
REVENUES	2477	2541	2612	2686	2720	2744	2769	2794	2817	2847	2881	2909	2933	2933
WITHOUT MX	3546	3408	8670	12228	14267	13701	13536	13769	13216	13233	13265	13293	13316	13316
WITH MX	1069	2867	6098	9342	11547	10937	10767	10975	10399	10384	10384	10384	10384	10384
DIFFERENCE	43 16	112 83	231 99	355 26	424 51	399 23	388 86	392 81	369 17	364 52	360 48	360 48	360 48	360 48
PCT DIFF														
EXPENDITURES	2497	2562	2633	2708	2742	2767	2792	2817	2840	2872	2904	2933	2957	2957
WITHOUT MX	4108	3917	9079	13529	15800	12938	12938	12938	12938	13011	13043	13074	13094	13094
WITH MX	1610	3335	6446	9821	10838	9331	10046	10178	10139	10137	10137	10137	10137	10137
DIFFERENCE	64 49	130 56	244 81	362 67	395 20	344 43	339 86	361 32	357 01	353 01	349 10	349 10	349 10	349 10
PCT DIFF														
MX INDUCED														
NET IMPACT	-541	-488	-387	-279	709	1426	721	797	260	245	245	247	247	247

SOURCE: MOR SCIENCES  
 (1) ESTIMATES REFLECT AGGREGATE REVENUES AND EXPENDITURES BY ALL SCHOOL DISTRICTS WITHIN THE COUNTY

4 NEW FN

Table 2.1.3-3. M-X related capital expenditure requirements (thousands FY 1980 \$)  
Baseline: Low - County: Beaver.

SERVICE	LINE ITEM (1980)	ANNUAL INVESTMENT REQUIRED (1)	PEAK YEAR
<b>PROPOSED ACTION</b>			
GENERAL OBLIGATION BOND ITEMS (2)	4811.0	2336.3	11297.6
REVENUE BOND ITEMS (3)	1824.1	1912.2	7220.2
SCHOOLS	16489.0	5406.1	20889.0
TOTAL	24429.1	13445.5	39416.8
<b>ALTERNATIVE 1</b>			
GENERAL OBLIGATION BOND ITEMS (2)	1081.3	1341.3	2644.2
REVENUE BOND ITEMS (3)	781.5	781.5	1523.9
SCHOOLS	1106.9	1106.9	4132.2
TOTAL	2969.7	2229.7	8306.3
<b>ALTERNATIVE 2</b>			
GENERAL OBLIGATION BOND ITEMS (2)	82.6	82.6	2366.3
REVENUE BOND ITEMS (3)	50.1	50.1	1348.1
SCHOOLS	61.7	61.7	3715.3
TOTAL	194.5	194.5	7448.7
<b>ALTERNATIVE 3</b>			
GENERAL OBLIGATION BOND ITEMS (2)	1355.9	425.6	3260.2
REVENUE BOND ITEMS (3)	797.3	199.1	1877.6
SCHOOLS	1480.6	496.9	4745.2
TOTAL	3633.8	1121.6	9892.0
<b>ALTERNATIVE 4</b>			
GENERAL OBLIGATION BOND ITEMS (2)	1355.9	425.6	3260.2
REVENUE BOND ITEMS (3)	797.3	199.1	1877.6
SCHOOLS	1480.6	496.9	4745.2
TOTAL	3633.8	1121.6	9892.0
<b>ALTERNATIVE 5</b>			
GENERAL OBLIGATION BOND ITEMS (2)	6430.8	974.2	15091.5
REVENUE BOND ITEMS (3)	4844.0	1518.7	9550.1
SCHOOLS	21632.8	5119.6	23178.0
TOTAL	32907.6	12352.5	47820.6
<b>ALTERNATIVE 6</b>			
GENERAL OBLIGATION BOND ITEMS (2)	6430.8	974.2	15091.5
REVENUE BOND ITEMS (3)	4844.0	1518.7	9550.1
SCHOOLS	21632.8	5119.6	23178.0
TOTAL	32907.6	12352.5	47820.6
<b>ALTERNATIVE 7A</b>			
GENERAL OBLIGATION BOND ITEMS (2)	3.0	0.0	2699.0
REVENUE BOND ITEMS (3)	0.0	0.0	1517.7
SCHOOLS	3.0	0.0	4260.1
TOTAL	6.0	0.0	8476.8

(1) ANNUAL ANNUAL INVESTMENT REQUIRED.  
(2) GENERAL OBLIGATION BOND ITEMS EXCLUDING PUBLIC, FIRE, SEWERAGE, WATER SERVICE, LIBRARY, AND SCHOOL CONSTRUCTION.  
(3) REVENUE BOND ITEMS EXCLUDING WATER AND SEWERAGE FACILITY IMPROVEMENTS.  
SOURCE: NEW YORK STATE, 1979-1980



Table 3.1.1-4. Local government revenues, expenditures, and net impacts (thousands FY 1960-3) (1)  
Baseline: High - County: Beaver. (page 1 of 2).



Table 2.1.3-5. School district revenues, expenditures, and net impacts (thousands FY 1980 \$) (1)  
 Baseline: High - County: Beaver. (page 1 of 2).

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>PROPOSED ACTION</b>													
<b>REVENUES</b>													
ATTNUT ME	1482	4637	5230	5846	6372	5130	5156	5232	5299	5387	5472	5560	5619
ATTN ME	1482	4607	5551	7101	11012	11597	14948	15669	14275	13569	13335	13421	14400
DIFFERENCE	0	0	321	1856	5500	8760	3214	10449	9176	8187	7863	7862	7861
PCT. DIFF.	0.00	0.00	6.11	31.74	86.93	154.98	203.21	203.21	173.17	151.89	143.68	141.41	139.91
<b>EXPENDITURES</b>													
ATTNUT ME	3511	4645	5273	5894	6425	5374	5209	5262	5343	5431	5517	5605	5665
ATTN ME	3511	4645	5376	8333	12586	13580	14374	14273	13646	13124	13209	13297	13356
DIFFERENCE	0	0	503	2439	6161	8215	3166	9110	8191	7691	7891	7891	7891
PCT. DIFF.	0.00	0.00	9.54	41.39	95.96	152.87	184.54	155.42	141.65	141.65	137.40	137.21	135.77
NET IMPACT	0	0	-143	-584	-622	45	527	330	873	440	171	170	170
<b>ALTERNATIVE 1</b>													
<b>REVENUES</b>													
ATTNUT ME	3432	4607	5230	5846	6372	5330	5156	5232	5299	5387	5472	5560	5619
ATTN ME	3432	4607	5551	7101	11012	11597	14948	15669	14275	13569	13335	13421	14400
DIFFERENCE	0	0	321	1856	5500	8760	3214	10449	9176	8187	7863	7862	7861
PCT. DIFF.	0.00	0.00	6.11	31.74	86.93	154.98	203.21	203.21	173.17	151.89	143.68	141.41	139.91
<b>EXPENDITURES</b>													
ATTNUT ME	3511	4645	5273	5894	6425	5374	5209	5262	5343	5431	5517	5605	5665
ATTN ME	3511	4645	5376	8333	12586	13580	14374	14273	13646	13124	13209	13297	13356
DIFFERENCE	0	0	503	2439	6161	8215	3166	9110	8191	7691	7891	7891	7891
PCT. DIFF.	0.00	0.00	9.54	41.39	95.96	152.87	184.54	155.42	141.65	141.65	137.40	137.21	135.77
NET IMPACT	0	0	-143	-584	-622	45	527	330	873	440	171	170	170
<b>ALTERNATIVE 2</b>													
<b>REVENUES</b>													
ATTNUT ME	3482	4637	5230	5846	6372	5330	5156	5232	5299	5387	5472	5560	5619
ATTN ME	3482	4607	5551	7101	11012	11597	14948	15669	14275	13569	13335	13421	14400
DIFFERENCE	0	0	321	1856	5500	8760	3214	10449	9176	8187	7863	7862	7861
PCT. DIFF.	0.00	0.00	6.11	31.74	86.93	154.98	203.21	203.21	173.17	151.89	143.68	141.41	139.91
<b>EXPENDITURES</b>													
ATTNUT ME	3511	4645	5273	5894	6425	5374	5209	5262	5343	5431	5517	5605	5665
ATTN ME	3511	4645	5376	8333	12586	13580	14374	14273	13646	13124	13209	13297	13356
DIFFERENCE	0	0	503	2439	6161	8215	3166	9110	8191	7691	7891	7891	7891
PCT. DIFF.	0.00	0.00	9.54	41.39	95.96	152.87	184.54	155.42	141.65	141.65	137.40	137.21	135.77
NET IMPACT	0	0	-143	-584	-622	45	527	330	873	440	171	170	170

Table 2.1.3-5. Shipped harvest revenues, expenditures, and net impacts (thousands FY 1980 \$) (1)  
Baseline: High - County: Beaver. (page 2 of 2).

DISTRICTS, SPECIAL DISTRICTS WITHIN THE COUNTY.		1910		1911		1912		1913		1914		1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360		2361		2362		2363		2364		2365		2366		2367		2368		2369		2370		2371		2372		2373		2374		2375		2376		2377		2378		2379		2380		2381		2382		2383		2384		2385		2386		2387		2388		2389		2390		2391		2392		2393		2394		2395		2396		2397		2398		2399		2400		2401		2402		2403		2404		2405		2406		2407		2408		2409		2410		2411		2412		2413		2414		2415		2416		2417		2418		2419		2420		2421		2422		2423		2424		2425		2426		2427		2428		2429		2430		2431		2432		2433		2434		2435		2436		2437		2438		2439		2440		2441		2442		2443		2444		2445		2446		2447		2448		2449		2450		2451		2452		2453		2454		2455		2456		2457		2458		2459		2460		2461		2462		2463		2464		2465		2466		2467		2468		2469		2470		2471		2472		2473		2474		2475		2476		2477		2478		2479		2480		2481		2482		2483		2484		2485		2486		2487		2488		2489		2490		2491		2492		2493		2494		2495		2496		2497		2498		2499		2500		2501		2502		2503		2504		2505		2506		2507		2508		2509		2510		2511		2512		2513		2514		2515		2516		2517		2518		2519		2520		2521		2522		2523		2524		2525		2526		2527		2528		2529		2530		2531		2532		2533		2534		2535		2536		2537		2538		2539		2540		2541		2542		2543		2544		2545		2546		2547		2548		2549		2550		2551		2552		2553		2554		2555		2556		2557		2558		2559		2560		2561		2562		2563		2564		2565		2566		2567		2568		2569		2570		2571		2572		2573		2574		2575		2576		2577		2578		2579		2580		2581		2582		2583		2584		2585		2586		2587		2588		2589		2590		2591		2592		2593		2594		2595		2596		2597		2598		2599		2600		2601		2602		2603		2604		2605		2606		2607		2608		2609		2610		2611		2612		2613		2614		2615		2616		2617		2618		2619		2620		2621		2622		2623		2624		2625		2626		2627		2628		2629		2630		2631		2632		2633		2634		2635		2636		2637		2638		2639		2640		2641		2642		2643		2644		2645		2646		2647		2648		2649		2650		2651		2652		2653		2654		2655		2656		2657		2658		2659		2660		2661		2662		2663		2664		2665		2666		2667		2668		2669		2670		2671		2672		2673		2674		2675		2676		2677		2678		2679		2680		2681		2682		2683		2684		2685		2686		2687		2688		2689		2690		2691		2692		2693		2694		2695		2696		2697		2698		2699		2700		2701		2702		2703		2704		2705		2706		2707		2708		2709		2710		2711		2712		2713		2714		2715		2716		2717		2718		2719		2720		2721		2722		2723		2724		2725		2726		2727		2728		2729		2730		2731		2732		2733		2734		2735		2736		2737		2738		2739		2740		2741	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Table 2.1.3-6. M-X related capital expenditure requirements (thousands FY 1980 \$)  
Baseline: High - County: Beaver.

ITEMS	LONG TERM (1984)	ANNUAL INVESTMENT REQUIRED (1)	DEAR 1980
<b>PHYSICAL FACILITY</b>			
GENERAL OBLIGATION BOND ITEMS (2)	4761.8	2705.2	11156.6
REVENUE BOND ITEMS (3)	3585.9	192.2	7129.4
SCHOOLS	5449.3	548.1	20786.3
TOTAL	24397.0	3385.5	19052.3
<b>ALTERNATIVE 1</b>			
GENERAL OBLIGATION BOND ITEMS (2)	915.1	315.1	2586.4
REVENUE BOND ITEMS (3)	687.2	487.2	7498.4
SCHOOLS	1014.3	1314.3	4018.6
TOTAL	2616.6	2316.6	8116.7
<b>ALTERNATIVE 2</b>			
GENERAL OBLIGATION BOND ITEMS (2)	11.7	11.7	2108.5
REVENUE BOND ITEMS (3)	21.3	21.3	7108.5
SCHOOLS	26.5	26.5	3082.7
TOTAL	61.4	61.4	7266.3
<b>ALTERNATIVE 3</b>			
GENERAL OBLIGATION BOND ITEMS (2)	1214.8	387.3	3087.5
REVENUE BOND ITEMS (3)	726.6	181.6	7108.5
SCHOOLS	1398.0	468.0	4551.5
TOTAL	3359.4	1235.9	9411.6
<b>ALTERNATIVE 4</b>			
GENERAL OBLIGATION BOND ITEMS (2)	1214.8	187.3	3087.5
REVENUE BOND ITEMS (3)	726.6	181.6	7108.5
SCHOOLS	1398.0	468.0	4551.5
TOTAL	3359.4	1235.9	9411.6
<b>ALTERNATIVE 5</b>			
GENERAL OBLIGATION BOND ITEMS (2)	6379.6	5618.2	14518.4
REVENUE BOND ITEMS (3)	4805.1	3401.2	9438.0
SCHOOLS	21846.1	5818.1	27871.3
TOTAL	32829.5	12501.2	47311.0
<b>ALTERNATIVE 6</b>			
GENERAL OBLIGATION BOND ITEMS (2)	6379.6	5618.2	14518.4
REVENUE BOND ITEMS (3)	4805.1	3401.2	9438.0
SCHOOLS	21846.1	5818.1	27871.3
TOTAL	32829.5	12501.2	47311.0
<b>ALTERNATIVE 7A</b>			
GENERAL OBLIGATION BOND ITEMS (2)	0.0	0.0	2657.6
REVENUE BOND ITEMS (3)	0.0	0.0	1518.0
SCHOOLS	0.0	0.0	4181.0
TOTAL	0.0	0.0	8356.6

(1) LONG TERM INVESTMENT REQUIRED.  
(2) GENERAL OBLIGATION BOND ITEMS INCLUDING POLICE, FIRE, CHASSIS, HEALTH SERVICES, LIBRARY,  
AND OTHER DEPARTMENTS.

(3) REVENUE BOND ITEMS INCLUDING WATER AND WASTEWATER FACILITY EXPENDITURES.

SOURCE: NEW SCIENTISTS, 11-10-79-20

population in-migration begins cannot be over-emphasized. Federal assistance is necessary to maintain anticipated service level demands. While peak year capital expenditure requirements under each OB alternative are higher, temporary facilities and mitigation strategies can reduce these costs substantially. Where the Beaver County area is not proposed for an OB location, little or no long-term growth is anticipated and little incentive exists for building for the peak year requirements. This situation can seriously affect public service levels in the area during peak year construction activities.

#### **EFFECTS ON POPULATION AND COMMUNITIES (2.1.4)**

The population effects of an operating base near Milford, Utah, which would be the greatest for Alternatives 5 and 6 when the first operating base is proposed, are projected to occur principally within Beaver County, although some spillover effect would be experienced in nearby Iron, Washington, and Juab counties in Utah, and in Lincoln County, Nevada. The M-X-related in-migrant population generated in Beaver County by the first operating base is projected to reach a maximum during the construction "boom" of about 24,200 in 1986, an increase of more than 470 percent over the trend-growth population projected that year, as shown in Table 2.1.4-1. If the effects of other concurrent projects such as Alunite Mining and processing, Roosevelt Hot Springs geothermal energy development, and the Pine Grove Molybdenum project, are added to those of M-X, a cumulative total of 30,900 in-migrants would be present in the County in 1986, an increase of more than 600 percent above the trend-growth population of 5,100 persons projected for that year. Over the five year construction "boom" period from 1982 through 1986, Beaver County's growth rate would increase to 45 percent annually with M-X, and would be slightly higher with other concurrent projects, compared to a trend-growth rate of 2.4 percent annually during the same period. In the long-term, out-migration of construction related population would reduce the total M-X population change to approximately 17,200 by 1990, about 326 percent above the trend-growth baseline. With the effects of other projects added to M-X, the cumulative long-term in-migrant population would be about 22,000 persons, more than 400 percent above the projected trend-growth baseline. The effects induced by the Proposed Action, when a second operating base is proposed, are about 25 percent less than for Alternatives 5 and 6.

The M-X construction-related population projected to be present in Beaver County would total approximately 8,700 persons in 1986, the peak year, about 36 percent of all in-migrants, while the equivalent proportions for military operations and civilian indirect and operations populations would be 30 percent and 34 percent, respectively, as is evident from Table 2.1.4-2. The construction related population, a large share of whom would be workers present without families, would likely have higher incomes, a slightly larger family household size, and younger age distribution than the general population (Mountain West Research, Inc., 1975), while the military related population would contain a large share of single persons and have a younger age structure and lower average income. (at least for enlisted personnel) than the general population. The civilian operations and indirect population generated by project related expansion of local economic activity would likely approximate the characteristic of the population of the western United States. The construction related and indirect populations are projected to temporarily present in Beaver County, with the premanent in-migrants comprised entirely of military and civilian operations personnel and their families. About 45 percent of the in-migrants

Table 2.1.4-1. Projected baseline population, M-X related population change, and cumulative population change related to M-X and other projects, by alternative, in Beaver.

ALTERNATIVE	1987	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASALINE POPULATION</b>													
WITH TREND CONTINUED (10)	4630	4778	4911	5031	5115	5161	5207	5254	5297	5337	5417	5471	5516
WITH OTHER PROJECTS (110)	4340	8663	9835	10993	11983	10023	9713	9014	9963	10130	10391	10493	10744
X NO ADJUST TO	40 6	81 3	100 3	117 6	134 3	94 2	86 6	86 8	88 1	89 1	90 0	91 1	91 6
<b>PROPOSED ACTION</b>													
M-X INITIO WITH TO	0	0	1236	3426	12316	16117	17328	17635	14605	13072	13072	13071	13071
X ADJUST TO BASELINE	0 0	0 0	25 2	107 4	244 7	312 3	312 8	336 0	275 7	244 0	241 3	238 9	237 0
M-X INITIO WITH TO	0	0	1117	3261	12316	15977	17190	17323	14307	13031	13030	13029	13020
M-X + OTHER PROJECTS	1890	3083	6041	11223	19106	20839	21706	22083	19175	17004	17904	18013	18078
X ADJUST TO BASELINE	40 6	81 3	123 0	232 2	375 1	403 8	416 9	420 3	362 0	372 4	336 5	329 2	327 7
<b>ALTERNATIVE 1</b>													
M-X INITIO WITH TO	0	0	396	3040	3700	1031	1429	1292	1002	950	946	943	944
X ADJUST TO BASELINE	0 0	0 0	8 1	40 0	76 4	35 3	27 4	24 4	10 9	17 3	17 3	17 3	17 1
M-X INITIO WITH TO	0	0	341	2964	3032	1707	1309	1171	904	850	843	840	838
M-X + OTHER PROJECTS	1890	3083	9263	9906	10700	15479	15817	15731	15372	15633	15717	15834	15888
X ADJUST TO BASELINE	40 6	81 3	107 2	176 3	209 2	127 3	111 7	109 1	103 2	103 0	103 5	106 0	106 7
<b>ALTERNATIVE 2</b>													
M-X INITIO WITH TO	130	403	1152	3647	4481	2230	1026	1809	1402	1291	1282	1281	1280
X ADJUST TO BASELINE	3 2	8 3	23 3	72 3	87 6	43 2	35 1	34 4	26 5	24 1	23 7	23 4	23 2
M-X INITIO WITH TO	109	320	1033	3499	4299	2089	1706	1688	1304	1191	1180	1176	1174
M-X + OTHER PROJECTS	1997	4205	5937	7441	11167	6931	6214	6248	5972	5964	6034	6160	6224
X ADJUST TO BASELINE	42 9	88 0	121 3	106 9	210 3	134 7	119 3	118 9	112 7	111 3	111 8	112 6	112 8
<b>ALTERNATIVE 4</b>													
M-X INITIO WITH TO	130	403	1152	3647	4481	2230	1026	1809	1402	1291	1282	1281	1280
X ADJUST TO BASELINE	3 2	8 3	23 3	72 3	87 6	43 2	35 1	34 4	26 5	24 1	23 7	23 4	23 2
M-X INITIO WITH TO	109	320	1033	3499	4299	2089	1706	1688	1304	1191	1180	1176	1174
M-X + OTHER PROJECTS	1997	4205	5937	7441	11167	6931	6214	6248	5972	5964	6034	6160	6224
X ADJUST TO BASELINE	42 9	88 0	121 3	106 9	210 3	134 7	119 3	118 9	112 7	111 3	111 8	112 6	112 8
<b>ALTERNATIVE 5</b>													
M-X INITIO WITH TO	3374	7391	14003	21621	24220	20813	20844	19928	17273	17233	17222	17222	17221
X ADJUST TO BASELINE	72 4	150 9	286 8	430 1	473 5	403 3	400 3	379 3	356 1	321 5	317 9	314 0	312 2
M-X INITIO WITH TO	3329	7498	13942	21447	24021	20673	20724	19030	17233	17102	17181	17179	17178
M-X + OTHER PROJECTS	5217	11383	18046	27371	30089	23335	23232	24410	21701	21953	22035	22163	22220
X ADJUST TO BASELINE	112 0	230 2	384 2	542 3	603 9	494 8	404 6	464 6	412 5	409 0	407 1	405 1	403 0
<b>ALTERNATIVE 6</b>													
M-X INITIO WITH TO	3374	7391	14003	21621	24220	20813	20844	19928	17273	17233	17222	17222	17221
X ADJUST TO BASELINE	72 4	150 9	286 8	430 1	473 5	403 3	400 3	379 3	356 1	321 5	317 9	314 0	312 2
M-X INITIO WITH TO	3329	7498	13942	21447	24021	20673	20724	19030	17233	17102	17181	17179	17178
M-X + OTHER PROJECTS	5217	11383	18046	27371	30089	23335	23232	24410	21701	21953	22035	22163	22220
X ADJUST TO BASELINE	112 0	230 2	384 2	542 3	603 9	494 8	404 6	464 6	412 5	409 0	407 1	405 1	403 0

SOURCE: U.S. BUREAU OF REVENUE, 1-NEW-80

Table 2.1.4-2. Projected cumulative population in-migration by project-related employment category, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / CATEGORIES	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>MIDRIVER ACTION</b>													
BASE CONSTRUCTION	0	0	0	342	2461	3726	2617	1327	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	0	9737	3272	811	252	74	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	0	0	2714	5431	8147	10974	10974	10974	10974	10974	10974
CIVILIAN OPERATIONS	0	0	0	0	440	944	1594	2087	2087	2087	2087	2087	2087
INDIRECT	0	0	840	2048	2228	5105	4718	2153	1533	0	0	0	0
TOTAL	0	0	1236	8426	12316	18117	17528	17553	14403	13072	13072	13072	13072
<b>ALTERNATIVE 1</b>													
BASE CONSTRUCTION	0	0	0	19	127	106	123	97	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	0	2731	3270	775	229	74	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	0	0	181	302	433	610	610	610	610	610	610
CIVILIAN OPERATIONS	0	0	0	0	0	12	47	74	74	74	74	74	74
INDIRECT	0	0	0	0	0	476	578	482	319	267	267	267	267
TOTAL	0	0	376	3040	3908	1831	1429	1292	1002	950	944	944	944
<b>ALTERNATIVE 2</b>													
BASE CONSTRUCTION	69	140	203	100	113	0	0	0	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	403	2734	3270	764	213	53	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	132	267	402	574	646	798	798	798	798	798	798
CIVILIAN OPERATIONS	0	0	0	0	31	61	89	116	116	116	116	116	116
INDIRECT	0	263	404	149	303	370	836	408	377	369	369	369	369
TOTAL	150	403	1102	3647	4403	2230	1026	1807	1402	1291	1282	1281	1280
<b>ALTERNATIVE 4</b>													
BASE CONSTRUCTION	69	140	203	100	113	0	0	0	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	403	2734	3270	764	213	53	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	132	267	402	574	646	798	798	798	798	798	798
CIVILIAN OPERATIONS	0	0	0	0	31	61	89	116	116	116	116	116	116
INDIRECT	0	263	404	149	303	370	836	408	377	369	369	369	369
TOTAL	150	403	1102	3647	4403	2230	1026	1807	1402	1291	1282	1281	1280
<b>ALTERNATIVE 5</b>													
BASE CONSTRUCTION	2063	3444	4104	3649	2106	0	0	0	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	435	2762	3270	764	213	53	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	2376	4809	7242	9618	11974	14370	14370	14370	14370	14370	14370
CIVILIAN OPERATIONS	1307	3797	5718	7419	9052	1046	3330	2853	2853	2853	2853	2853	2853
INDIRECT	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3374	7391	14085	21621	24220	20813	20844	19928	17273	17273	17273	17273	17273
<b>ALTERNATIVE 6</b>													
BASE CONSTRUCTION	2063	3444	4104	3649	2106	0	0	0	0	0	0	0	0
CLUSTER CONSTRUCTION	0	0	435	2762	3270	764	213	53	0	0	0	0	0
ASSEMBLY & CHECKOUT	0	0	10	200	360	60	0	0	0	0	0	0	0
MILITARY OPERATIONS	0	0	2376	4809	7242	9618	11974	14370	14370	14370	14370	14370	14370
CIVILIAN OPERATIONS	1307	3797	5718	7419	9052	1046	3330	2853	2853	2853	2853	2853	2853
INDIRECT	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3374	7391	14085	21621	24220	20813	20844	19928	17273	17273	17273	17273	17273

EMPLOYMENT CATEGORY IS FOR PRIMARY WORKER IN INDUSTRY SOURCE: IBM SCIENTER, 1-NOV-80



present in the peak year (10,900 persons) are projected to be civilian labor force participants and another 22 percent (5,300) would be school-age population. In the long-term, about 17 percent of the 17,200 permanent in-migrants would be civilian labor force participants and another 28 percent are projected to be school age population.

The projected M-X-related in-migrant population at the county level has been disaggregated to three spatial categories of residence: construction camps, the operating base, and local communities (Table 2.1.4-3). In 1986, the peak year, about 57 percent of the in-migrants present (13,800 persons) would require accommodations in local communities, while 38 percent (9,200) would be housed on base and five percent (1,200) in temporary construction camps near DDA facility construction sites. In the long-term, only about one-third of the project related population is projected to reside in Beaver County's communities, with two-thirds accommodated on the operations base. The community population generated within Beaver County by the proposed base in Alternatives 5 and 6 is most likely to be absorbed in the Milford and Minersville areas, with smaller effects in the vicinity of the community of Beaver.

Smaller population effects from an operating base near Milford would be experienced in nearby Iron, Washington, and Millard counties in Utah and Lincoln County, Nevada, which are projected to approximately 2,000, 300, 100, and 200 permanent in-migrants, respectively. These are most likely to be accommodated in the communities of Cedar City (Iron County), St. George (Washington), Delta (Millard), and Pioche/Panaca (Lincoln).

## **EFFECTS ON LAND USE (2.1.5)**

### **Community Land Use**

Milford and the surrounding communities in Beaver County, Utah, will receive significant long-term community land use impacts from six of the eight Nevada/Utah deployment alternatives. Of the two remaining alternatives, Beaver County will be subject to temporary requirements under Alternative 8, and insignificant long-term requirements under Alternative 2. Table 2.1.5-1 provides land requirements for the community land uses in Beaver County. Under alternatives 5 and 6, an OB I will be located at Milford while the Proposed Action includes an OB II at Milford.

### **Proposed Action, Alternatives 5 and 6**

Alternatives 5 and 6 have the largest peak and long-term community land area requirements. The requirements of the Proposed Action are three-quarters of the needs for alternatives 5 and 6 during the respective peak years and long-term periods. Demands for land under alternatives 5 and 6 commence in 1982 with 391 acres. The peak period is reached in 1985 at 2,018 acres. Land for housing (1,027 acres) is the largest single land use category and of this category mobile homes will use over two-thirds of the land area. The peak demands of the construction period have a duration of five years through 1988. At this time, the lower requirements of the operations phase, approximately 940 acres, are reached. Housing is still the largest land use, however, the proportion of mobile homes to permanent housing is reversed with permanent housing now comprising the larger portion of the land for housing (84 percent).

Table 2.1.4-3. Projected cumulative population in-migration by place of residence, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / PLACE OF RESIDENCE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>PROPOSED ACTION</b>													
CONSTRUCTION CAMPS	0	0	99	943	1173	243	0	0	0	0	0	0	0
OPERATIONS BASE	0	0	0	99	2042	520	7201	9144	8701	8781	8701	8781	8781
LOCAL COMMUNITIES	0	0	1137	4383	8493	10504	10693	8311	5823	4292	4291	4291	4290
TOTAL	0	0	1236	5426	12318	18117	17328	17653	14603	13072	13072	13071	13071
<b>ALTERNATIVE 1</b>													
CONSTRUCTION CAMPS	0	0	99	943	1173	243	0	0	0	0	0	0	0
OPERATIONS BASE	0	0	0	0	0	0	0	0	0	0	0	0	0
LOCAL COMMUNITIES	0	0	897	2084	2734	1308	1429	1292	1002	930	944	943	944
TOTAL	0	0	796	3070	3908	1831	1429	1292	1002	930	944	943	944
<b>ALTERNATIVE 2</b>													
CONSTRUCTION CAMPS	0	0	99	943	1173	243	0	0	0	0	0	0	0
OPERATIONS BASE	0	0	0	0	0	0	0	0	0	0	0	0	0
LOCAL COMMUNITIES	180	403	1033	2704	3310	1987	1824	1809	1402	1291	1282	1281	1280
TOTAL	180	403	1132	3647	4483	2230	1824	1809	1402	1291	1282	1281	1280
<b>ALTERNATIVE 4</b>													
CONSTRUCTION CAMPS	0	0	99	943	1173	243	0	0	0	0	0	0	0
OPERATIONS BASE	0	0	0	0	0	0	0	0	0	0	0	0	0
LOCAL COMMUNITIES	180	403	1033	2704	3310	1987	1824	1809	1402	1291	1282	1281	1280
TOTAL	180	403	1132	3647	4483	2230	1824	1809	1402	1291	1282	1281	1280
<b>ALTERNATIVE 8</b>													
CONSTRUCTION CAMPS	0	0	109	930	1170	243	0	0	0	0	0	0	0
OPERATIONS BASE	344	1289	3941	4440	9238	10344	12393	14144	11546	11496	11496	11496	11496
LOCAL COMMUNITIES	2810	4302	10033	14030	13003	10024	8449	5782	5726	5726	5726	5723	5723
TOTAL	3374	7591	14083	21621	24220	20813	20844	19928	17273	17233	17222	17222	17221
<b>ALTERNATIVE 6</b>													
CONSTRUCTION CAMPS	0	0	109	930	1170	243	0	0	0	0	0	0	0
OPERATIONS BASE	344	1289	3941	4440	9238	10344	12393	14144	11546	11496	11496	11496	11496
LOCAL COMMUNITIES	2810	4302	10033	14030	13003	10024	8449	5782	5726	5726	5726	5723	5723
TOTAL	3374	7591	14083	21621	24220	20813	20844	19928	17273	17233	17222	17222	17221

SOURCE: IDR SCIENCE, 1-NOV-80

Table 2.1.5-1. Cumulative M-X related land requirements (acres) by use category, by alternative in Beaver assuming trend baseline.

ALTERNATIVE / LAND USE CATEGORY	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>PROPOSED ACTION</b>													
PERMANENT HOMES	0	0	14	41	132	260	291	340	340	302	327	327	327
MOBILE HOMES	0	0	0	257	435	515	472	331	150	74	39	54	59
SUBTOTAL	0	0	14	288	567	775	763	671	490	376	366	381	386
RETAIL/COMM /INDUS	0	0	5	25	48	56	56	51	38	29	27	27	27
STS AND HWYS	0	0	0	202	392	505	493	422	297	219	221	221	221
PUBLIC/INSTITUTIONAL	0	0	18	77	149	176	164	138	93	70	70	70	70
TOTAL	0	0	161	602	1176	1513	1475	1283	918	694	704	704	704
<b>ALTERNATIVE 1</b>													
PERMANENT HOMES	0	0	0	0	7	26	35	48	56	63	70	70	70
MOBILE HOMES	0	0	18	125	157	103	61	50	25	17	13	13	13
SUBTOTAL	0	0	18	125	166	109	101	98	81	80	83	83	83
RETAIL/COMM /INDUS	0	0	0	12	18	22	22	22	22	22	22	22	22
STS AND HWYS	0	0	1	8	112	72	68	62	49	46	48	48	48
PUBLIC/INSTITUTIONAL	0	0	5	42	35	29	24	22	17	16	16	16	16
TOTAL	0	0	36	265	351	219	203	189	150	146	150	150	150
<b>ALTERNATIVE 3</b>													
PERMANENT HOMES	10	28	0	0	205	134	126	126	96	88	87	87	87
MOBILE HOMES	10	28	70	166	205	134	126	126	96	88	87	87	87
SUBTOTAL	20	56	70	339	410	268	252	252	192	176	174	174	174
RETAIL/COMM /INDUS	2	3	7	39	20	10	7	6	5	4	4	4	4
STS AND HWYS	6	20	48	114	141	92	87	86	66	60	59	59	59
PUBLIC/INSTITUTIONAL	3	7	18	54	63	35	30	29	24	22	22	22	22
TOTAL	21	58	143	352	430	271	250	247	191	174	172	172	172
<b>ALTERNATIVE 4</b>													
PERMANENT HOMES	0	0	0	0	0	0	0	0	0	0	0	0	0
MOBILE HOMES	10	28	70	166	205	134	126	126	96	88	87	87	87
SUBTOTAL	10	28	70	166	205	134	126	126	96	88	87	87	87
RETAIL/COMM /INDUS	2	3	7	39	20	10	7	6	5	4	4	4	4
STS AND HWYS	6	20	48	114	141	92	87	86	66	60	59	59	59
PUBLIC/INSTITUTIONAL	3	7	18	54	63	35	30	29	24	22	22	22	22
TOTAL	21	58	143	352	430	271	250	247	191	174	172	172	172
<b>ALTERNATIVE 5</b>													
PERMANENT HOMES	55	136	207	305	314	380	400	404	437	437	437	437	437
MOBILE HOMES	142	318	510	722	703	471	233	103	79	79	79	79	79
SUBTOTAL	197	454	717	1027	1017	851	633	507	516	516	516	516	516
RETAIL/COMM /INDUS	15	32	55	82	90	70	66	58	36	35	35	35	35
STS AND HWYS	180	300	401	674	666	508	433	297	297	297	297	297	297
PUBLIC/INSTITUTIONAL	49	101	166	214	279	156	131	95	94	94	94	94	94
TOTAL	391	890	1428	2013	2002	1535	1363	954	943	942	942	942	942
<b>ALTERNATIVE 6</b>													
PERMANENT HOMES	35	136	207	305	314	380	400	404	437	437	437	437	437
MOBILE HOMES	142	318	510	722	703	471	233	103	79	79	79	79	79
SUBTOTAL	197	454	717	1027	1017	851	633	507	516	516	516	516	516
RETAIL/COMM /INDUS	15	32	55	82	90	70	66	58	36	35	35	35	35
STS AND HWYS	130	300	481	674	666	508	433	297	297	297	297	297	297
PUBLIC/INSTITUTIONAL	49	101	166	214	279	156	131	95	94	94	94	94	94
TOTAL	391	890	1428	2013	2002	1535	1363	954	943	942	942	942	942

SOURCE: HDR SCIENCES, 1-NOV-80

### Impact on Availability of Land

Vacant urban land to meet the project requirements and the impact of the project on community size and vacant land is provided in Table 2.1.5-2. As is evident in the table, a large shortfall of community land is projected in the peak year for Beaver County. In 1978, a total of approximately 700 acres of urban land was vacant in the three Beaver County communities of Beaver City, Minersville, and Milford. The peak year requirements exceed this figure by almost twofold. Several documents have been prepared that provide guidance for future growth. From the Beaver County Master Plan, several policies address development:

- Development within the county should be centered as much as possible within the three existing municipalities. No scattering of businesses or residential subdivisions should be allowed along the major highways, in the mountains, or in the desert valleys.
- Areas used for agriculture and areas having agricultural potential should be protected and preserved for agricultural use. Agricultural production should be increased wherever possible.
- Commercial activities should be grouped together. The central business districts of Millard and Beaver should be planned for development into shopping centers rather than permitting commercial developments to "string out" along the highways (Beaver County, 1972).

Planning for Growth in Beaver County (Five County Association, 1976) recommended that residential densities be increased in Minersville and Beaver City prior to expansions of the municipal boundaries. The recommendation for Milford directed additional growth to the areas north and south of the present city limits. The extent to which these recommendations will enable Beaver County to accommodate the projected growth is tenuous. The likelihood is very high that further-reaching actions will be necessary in order to accommodate the M-X-induced growth as well as provide ample room for baseline growth. (A large development that will have impacts upon Minersville and Milford is the Alunite Project). The potential also exists for a significant share of the urban land requirements being satisfied by a scattering of mobile homes and urban uses outside of the present communities. Such a scattering is likely to be accompanied by conflicts between urban and rural land uses. The degree to which this scattering could take place is dependent upon the stringency and enforcement of the county ordinances such as the zoning code and subdivision regulations.

In light of the above circumstances, the impact upon community land availability at the countywide level is extremely adverse. A similar conclusion is valid for the availability of vacant land in each of the individual communities. Annexation and conversion of rural land to urban uses will serve to mitigate this effect to some degree but such actions are likely to be accompanied by impacts upon agricultural land (e.g., Minersville) and high costs for the extension of utility and infrastructure systems. Sufficient private land near each community is available for conversion to urban uses following annexation.

Communities in eastern Iron County are projected to be the receptors of spillover effects from an OB at Milford. The peak year of these impacts coincides

Table 2.1.5-2. M-X urban land requirements and impacts - Beaver County.

ALTERNATIVE* (TYPE OF FACILITY)	CURRENT URBAN LAND**			PEAK YEAR				LONG TERM			
				LAND REQUIREMENT		PROJECTED VACANT LAND		LAND REQUIREMENT		PROJECTED VACANT LAND	
	VACANT (ACRES)	DEVELOPED (ACRES)	TOTAL (ACRES)	ACRES	% OF DEVELOPED LAND	ACRES	% OF TOTAL URBAN LAND	ACRES	% OF DEVELOPED LAND	ACRES	% OF TOTAL URBAN LAND
5, 6 (CR 1)	699	992	1,691	2,017	203.3%	-1,318	—	942	95.0%	213	—
Proposed Action (OR 11)	699	992	1,691	1,513	152.5%	-814	—	701	71.0%	5	—
3, 4 (Construction Camp)	699	992	1,691	430	43.3%	269	15.9%	172	17.3%	527	31.2%

\* Only representative alternatives are listed.

\*\* Includes land within existing incorporated and unincorporated communities.

Source: Five-County Association, 1978.

with the transition between the construction and operational phases at Milford, Paragonah, Parowan, Enoch, and Cedar City in Iron County currently have a combined acreage of approximately 2,850 acres. This should be sufficient to handle the peak period demand of 450 acres without adverse impacts. Likewise, a spillover of 550 acres is expected in Millard County to the north. With vacant urban lands totalling 5,700 acres, the impact would not be significant.

Long-term demands on Beaver County under alternatives 5 and 6 would exceed the vacant land available at the present time. The shortfall is equivalent to one-third of the 700 acres of currently vacant land. Long-term requirements for the Proposed Action would be equal to the currently vacant acres but would not provide any excess capacity for growth. The shortage of urban land would be adverse at the individual community level as well as on a countywide basis. A virtual halt to baseline growth, rapidly escalating land prices, increased housing costs, and imbalances in the local economy as some goods and services would not be available are some of the impacts resulting from a shortage of land for urban development. Annexation and the conversion of rural to urban land can act toward mitigating these impacts. Long-term spillover effects in the adjacent counties are not significant.

### **Other Impacts**

The size of the communities in Beaver County will more than triple during the construction period if all of the land is developed on a permanent basis. Since this growth will take only four years, the opportunities for providing guidance with regard to the character, scale, quality, and location of this growth are minimal. As a result, it can be expected that numerous conflicting land uses, "leapfrog" developments, and other symptoms of poor planning will emerge. The conclusion of the construction period may bring in problems of returning land used for temporary structures to former land uses as well as the removal of abandoned structures.

The periods of growth and departure will cause great fluctuations in property values. In addition, the character of the communities will undergo significant changes due to the construction of numerous temporary structures and abbreviated periods for design review of development proposals. The above-noted impacts on Beaver County are extremely adverse. Mitigation measures are not available to significantly modify the impacts.

### **Other Alternatives**

Alternatives 1, 3, and 4 have spillovers from the construction of the DDA and the OB at Beryl. Peak year requirements for alternatives 3 and 4 are approximately one-fifth of the requirements under alternatives 5 and 6. This will mean significant impacts on the availability of land in Beaver County if annexations are not made. The effects of rapid growth as described above will still be apparent in Beaver County but not at such extreme levels. In regard to the long-term, alternatives 1, 3, and 4 have requirements slightly less than one-fifth of the requirements for alternatives 5 and 6.

### **Conclusions**

Peak period requirements exceed the vacant community land by twofold in Beaver County. Annexations can mitigate these impacts but they may introduce new impacts on agricultural lands. Spillover effects into neighboring counties are

projected to occur, but the effects should not be significant. Long term requirements in Beaver County will still require annexations in order to meet the community land needs. The largest impacts in Beaver County will be the result of the high growth rate during the initial four years of construction. Extremely adverse impacts upon planning efforts would be the result and mitigation measures are not available to significantly modify the impacts.

### **Rural Land Use**

This section will discuss two types of land uses that could be affected by a potential operating base at Milford, Utah. They are: agricultural, and recreation.

#### **Agriculture**

Neither the base nor the suitability zone would occupy no existing cropland. Because of its proximity to the potential operating base to croplands near Milford, they could be subject to pressure for private urban development unless laws protecting such farmland are adopted and enforced by the county.

#### **Effects on Recreation**

There are no fishing or recreational areas located on land designated for the OB site or in the suitability envelope (See Fig. 2.1.5-1). Those portions of the area in public domain are open to dispersed recreational use, including collecting activities, off-road recreational vehicle use, and small game hunting.

The proposed OB site at Milford is projected to have a population in-migration of approximately 18,000 people in the peak year of 1989 with a steady state of 13,000 by 1991 in Beaver County. Both these population levels represent significant increases over projected baseline population levels with or without other proposed projects (e.g., Intermountain Power Project, Alunite Plant). This substantial population increase is expected to produce a concomitant increase in recreational demand or visitations. This projected recreational demand is assumed to be most significant at those sites which are most attractive and of close proximity (Fig. 2.1.5-1). Based upon the indirect effect index analysis, those recreation sites expected to receive the greatest amount of demand are Bryce Canyon and Zion National Parks, Cedar Breaks National Monument, the eastern section of the Dixie Division of the Dixie National Forest, Red Canyon, Piute Lake, Minersville Lake, Kents Lake and Otter Creek State Park.

Fishing resources sites within approximately 50 miles of the proposed Milford OB would be expected to receive the greatest amount of new fishing pressure. Resources within 50 miles are located in the following hydrologic subunits: Milford, Pine, Wah Wah, Lund, Beryl-Enterprise, Snake, Hamblin, White, Parowan, and Beaver. For a list of the resources within these subunits see Table 3.1.7.2-1 in the aquatic habitats and biota technical report.

The Utah SCORP (Draft 1978) projects future facility deficiencies for the following activities in Planning District 6, which includes Beaver County: bike and hiking trails, snowmobile trails, campsites and picnic sites. The added demand related to M-X is expected to add to these projected deficiencies. U.S. Forest

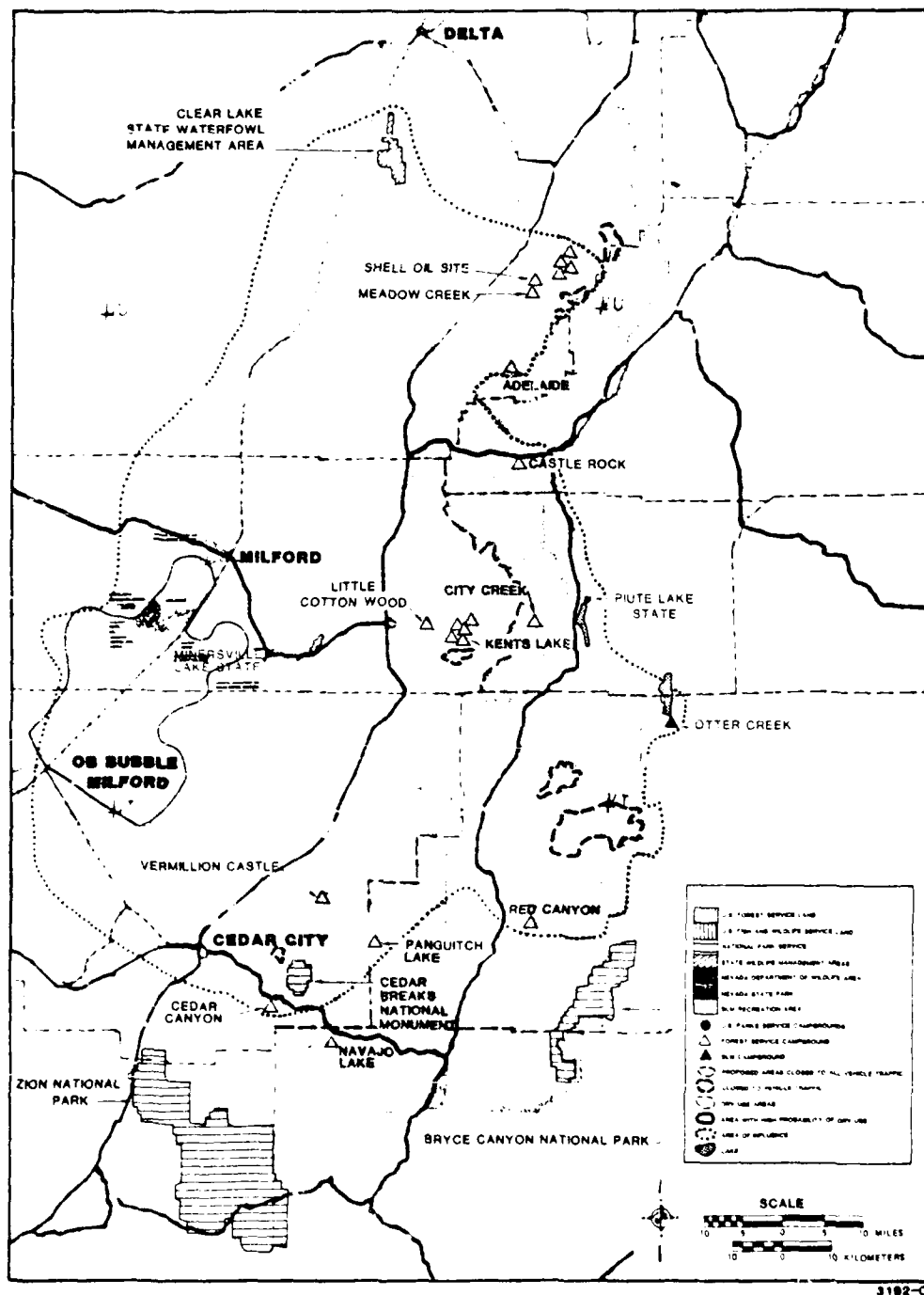


Figure 2.1.5-1. Area of most intensive recreational influence around the proposed Milford OR site.



Service RIM data (1979) indicate that Little Cottonwood, Little Reservoir, Anderson's Meadow, Pauquitch Lake, Red Canyon Reservoir and Navajo Lake are all experiencing use levels above what is considered a "well managed site." For example, the Pauquitch Lake boat ramp is presently operating just above 100 percent of its theoretical capacity. Other sites such as Kent Lake are below the theoretical capacity of a "well managed site".

#### EFFECTS ON LAND OWNERSHIP (2.1.6)

Figure 1.1.5-1 shows the potential operating base near Milford, Utah, and the land ownerships in the area. Table 2.1.6-1 shows the number of acres of land of each ownership type that would be occupied by the potential operating base and facilities, and the number of acres of each type within the suitability zone around the potential base.

It can be seen that 88 percent of the area of the operating base facilities would be located on BLM land, 8 percent on private land, and the remainder on state land. Considerably more private land is involved with the suitability zone, however, being 43 percent of the zone, and with BLM and state lands being 42 and 15 percent, respectively.

The 7,380 acres of BLM land, 640 acres of private land, and 320 acres of state land required for the potential Milford operating base are equal to 2.5, 0.1, and 0.08 percent of those resources in Millard County, respectively. These are not considered to be significant impacts.

#### EFFECTS ON HOUSING (2.1.7)

The cumulative total housing unit requirements in local communities, by type of structure, and by alternative, for Beaver County, Utah are given in Table 2.1.7-1. Under the Proposed Action, Operating Base II is scheduled to be located near Milford, and thus the housing requirements are quite large, peaking at 3,626 units in 1987, including 667 single-family, 384 multi-family, and 2,575 mobile homes. After the peak year the housing requirements decline, dropping off sharply between 1989 and 1991, to reach a long-term level of 1,484 units, consisting of 890 single-family, 197 multi-family, and 297 mobile homes. Such a large difference between peak-year and long-term needs will result in large surpluses, especially of mobile homes, which will probably have to be removed entirely from the county since the normal growth requirements are nowhere near large enough to absorb them. It may be possible, however, to use some significant portion of the mobile homes to meet the transient needs of the communities as the project's construction phase moves on. The anticipated presence of other projects, when the high baseline is assumed, will reduce the net M-X requirements slightly and will similarly effect the surplus of mobile homes (Tables 2.1.7-2). However, when added to the net M-X impacts over the high growth baseline, the combined housing requirements are significantly increased, reaching a peak total of 5,294 units in 1987, some 291 percent above baseline, compared to 199 percent above with M-X alone (Table 2.1.7-3).

Beaver County is affected more by the housing requirements of Alternatives 5 and 6, however, when Operating Base I is located near Milford. Here, the need for housing is felt immediately, and in large numbers, peaking at 4,851 units in 1985, consisting of 778 single-family, 462 multi-family, and 3,611 mobile homes.

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Table 2.1.6-1. Land ownership at potential operating base facilities at Milford, Utah.

OWNERHIP TYPE	OPERATING BASE FACILITIES		SUITABILITY ZONE	
	ACRE	PERCENT OF OB	ACRE	PERCENT OF ZONE
Private	640	8	91,520	43
State	430	4	30,720	15
BLM	7,380	88	87,040	42
Total	8,340	100	209,280	100

3858

Source: Department of Interior, 1977.

Table 2.1.7-1. Cumulative M-X related housing unit requirements in local communities by housing type, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / HOUSING TYPE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASELINE REQUIREMENTS</b>	1641	1683	1730	1779	1802	1818	1834	1851	1866	1887	1908	1927	1943
<b>PROPOSED ACTION</b>													
SINGLE FAMILY UNITS	0	0	32	97	324	667	743	888	998	816	891	890	890
MULTI-FAMILY UNITS	0	0	32	89	204	384	430	444	412	297	297	297	297
MOBILE HOMES	0	0	341	1283	2274	2575	2359	1655	750	371	297	297	297
TOTAL M-X RELATED	0	0	405	1469	2835	3626	3532	2987	2040	1484	1484	1484	1484
M-X PLUS BASELINE	1641	1683	2134	3248	4637	5444	5366	4838	3926	3371	3392	3411	3427
<b>ALTERNATIVE 1</b>													
SINGLE FAMILY UNITS	0	0	0	1	19	66	90	127	148	172	192	192	192
MULTI-FAMILY UNITS	0	0	0	1	11	36	51	63	68	64	64	64	64
MOBILE HOMES	0	0	89	624	793	416	342	251	125	85	64	64	64
TOTAL M-X RELATED	0	0	89	624	823	518	484	441	341	322	320	320	319
M-X PLUS BASELINE	1641	1683	1819	2403	2625	2736	2318	2292	2207	2209	2228	2247	2262
<b>ALTERNATIVE 2</b>													
SINGLE FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MULTI-FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MOBILE HOMES	51	141	349	829	1025	669	631	629	480	438	435	435	435
TOTAL M-X RELATED	51	141	349	829	1025	669	631	629	480	438	435	435	435
M-X PLUS BASELINE	1692	1824	2079	2608	2827	2487	2465	2480	2346	2325	2343	2362	2378
<b>ALTERNATIVE 4</b>													
SINGLE FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MULTI-FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MOBILE HOMES	51	141	349	829	1025	669	631	629	480	438	435	435	435
TOTAL M-X RELATED	51	141	349	829	1025	669	631	629	480	438	435	435	435
M-X PLUS BASELINE	1692	1824	2079	2608	2827	2487	2465	2480	2346	2325	2343	2362	2378
<b>ALTERNATIVE 5</b>													
SINGLE FAMILY UNITS	139	330	508	778	799	987	1263	1091	1191	1190	1190	1190	1190
MULTI-FAMILY UNITS	94	255	384	463	477	514	591	597	597	597	597	597	597
MOBILE HOMES	708	1590	2591	3611	3513	2105	1163	513	397	397	397	397	397
TOTAL M-X RELATED	941	2175	3483	4851	4789	3605	3016	2001	1984	1984	1984	1984	1984
M-X PLUS BASELINE	2582	3858	5213	6630	6591	5423	4850	3852	3850	3871	3892	3911	3927
<b>ALTERNATIVE 6</b>													
SINGLE FAMILY UNITS	139	330	508	778	799	987	1263	1091	1191	1190	1190	1190	1190
MULTI-FAMILY UNITS	94	255	384	463	477	514	591	597	597	597	597	597	597
MOBILE HOMES	708	1590	2591	3611	3513	2105	1163	513	397	397	397	397	397
TOTAL M-X RELATED	941	2175	3483	4851	4789	3605	3016	2001	1984	1984	1984	1984	1984
M-X PLUS BASELINE	2582	3858	5213	6630	6591	5423	4850	3852	3850	3871	3892	3911	3927

Table 2.1.7-2. Cumulative M-X related housing unit requirements in local communities by housing type, by alternative, in Beaver assuming high baseline.

ALTERNATIVE / HOUSING TYPE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASELINE REQUIREMENTS</b>	2307	3032	3465	3873	4222	3531	3423	3437	3511	3569	3626	3640	3722
<b>PROPOSED ACTION</b>													
SINGLE FAMILY UNITS	0	0	29	93	314	458	734	874	883	808	881	881	881
MULTI-FAMILY UNITS	0	0	29	83	230	274	325	438	403	379	374	374	374
MOBILE HOMES	0	0	309	123	230	234	232	143	736	37	24	24	24
TOTAL M-X RELATED	0	0	342	1424	2771	3589	3490	2943	2023	1449	1449	1449	1449
M-X PLUS BASELINE	2307	3032	3832	5297	6993	7112	6913	6402	5534	5038	5093	5151	5190
<b>ALTERNATIVE 1</b>													
SINGLE FAMILY UNITS	0	0	0	1	19	41	82	114	132	152	169	168	168
MULTI-FAMILY UNITS	0	0	0	1	10	33	47	57	61	57	54	54	54
MOBILE HOMES	0	0	74	608	776	383	312	224	111	75	34	34	34
TOTAL M-X RELATED	0	0	74	610	805	479	441	398	304	284	281	280	280
M-X PLUS BASELINE	2307	3032	3541	4483	5027	4010	3844	3835	3815	3853	3907	3763	4002
<b>ALTERNATIVE 3</b>													
SINGLE FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MULTI-FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MOBILE HOMES	37	112	312	783	967	424	589	584	443	401	377	376	376
TOTAL M-X RELATED	37	112	312	783	967	424	589	584	443	401	377	376	376
M-X PLUS BASELINE	2344	3144	3777	4656	5189	4135	4012	4043	3934	3970	4023	4074	4117
<b>ALTERNATIVE 4</b>													
SINGLE FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MULTI-FAMILY UNITS	0	0	0	0	0	0	0	0	0	0	0	0	0
MOBILE HOMES	37	112	312	783	967	424	589	584	443	401	377	376	376
TOTAL M-X RELATED	37	112	312	783	967	424	589	584	443	401	377	376	376
M-X PLUS BASELINE	2344	3164	3777	4656	5189	4135	4012	4043	3934	3970	4023	4074	4117
<b>ALTERNATIVE 5</b>													
SINGLE FAMILY UNITS	137	326	500	767	787	977	1250	1083	1182	1181	1181	1181	1180
MULTI-FAMILY UNITS	93	252	379	437	470	509	584	584	584	584	584	584	584
MOBILE HOMES	497	1569	2358	3571	3467	2074	1129	497	394	394	394	394	393
TOTAL M-X RELATED	727	2146	3436	4795	4283	3540	2974	1974	1949	1949	1949	1949	1947
M-X PLUS BASELINE	3234	5198	6901	8666	8947	7091	6397	5431	5480	5530	5594	5651	5689
<b>ALTERNATIVE 6</b>													
SINGLE FAMILY UNITS	137	326	500	767	787	977	1250	1083	1182	1181	1181	1181	1180
MULTI-FAMILY UNITS	93	252	379	437	470	509	584	584	584	584	584	584	584
MOBILE HOMES	497	1569	2358	3571	3467	2074	1129	497	394	394	394	394	393
TOTAL M-X RELATED	727	2146	3436	4795	4283	3540	2974	1974	1949	1949	1949	1949	1947
M-X PLUS BASELINE	3234	5198	6901	8666	8947	7091	6397	5431	5480	5530	5594	5651	5689

Table 2.1.7-3. Cumulative baseline housing unit requirements in local communities, and cumulative total housing unit requirements related to M-X and other projects, by alternative, in Beaver.

ALTERNATIVE	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASLINE REQUIREMENTS</b>													
WITH TREND GROWTH (T0)	1441	1683	1730	1779	1802	1818	1834	1851	1864	1887	1908	1927	1943
WITH OTHER PROJECTS (M0)	2307	3032	3143	3273	3322	3331	3423	3437	3511	3549	3626	3643	3722
% ABOVE TO	40.4	81.3	100.3	117.4	124.2	94.2	86.4	84.8	88.1	89.1	90.0	91.1	91.4
<b>PROPOSED ACTION</b>													
M-X HOUSING WITH T0	0	0	404	1449	2833	3424	3532	3987	3040	1484	1484	1484	1484
% ABOVE TO BASELINE	0.0	0.0	23.3	82.8	137.3	199.4	192.8	141.4	110.4	78.4	77.8	77.0	76.4
M-X HOUSING WITH M0	0	0	347	1424	2771	3301	3490	3943	3023	1449	1449	1448	1448
M-X + OTHER PROJECTS	445	1348	2101	3317	3190	3394	3078	4331	3447	3150	3184	3324	3347
% ABOVE TO BASELINE	40.4	81.3	121.8	197.7	288.0	291.1	276.8	213.9	194.8	164.9	164.9	167.3	167.1
<b>ALTERNATIVE 1</b>													
M-X HOUSING WITH T0	0	0	87	426	823	918	484	441	341	322	320	320	319
% ABOVE TO BASELINE	0.0	0.0	5.1	25.2	48.7	28.8	26.4	23.8	18.3	17.1	16.8	16.6	16.4
M-X HOUSING WITH M0	0	0	74	410	803	479	441	398	304	284	281	280	280
M-X + OTHER PROJECTS	445	1348	1810	2703	3234	2192	3029	3004	1948	1948	1998	2024	2039
% ABOVE TO BASELINE	40.4	81.3	104.7	181.9	170.9	120.8	110.4	108.3	104.4	104.1	104.7	105.4	104.0
<b>ALTERNATIVE 2</b>													
M-X HOUSING WITH T0	51	141	349	827	1033	649	431	429	480	438	433	433	433
% ABOVE TO BASELINE	3.1	8.4	20.2	46.4	54.9	34.8	24.4	24.0	25.7	23.2	22.8	22.4	22.4
M-X HOUSING WITH M0	37	118	312	783	967	434	389	384	443	401	377	374	373
M-X + OTHER PROJECTS	702	1480	2044	2876	3384	2337	2177	2192	2087	2002	2114	2132	2174
% ABOVE TO BASELINE	42.8	86.0	118.3	161.4	187.9	128.8	118.7	118.4	111.9	110.3	110.8	111.4	111.9
<b>ALTERNATIVE 4</b>													
M-X HOUSING WITH T0	51	141	349	827	1033	649	431	429	480	438	433	433	433
% ABOVE TO BASELINE	3.1	8.4	20.2	46.4	54.9	34.8	24.4	24.0	25.7	23.2	22.8	22.4	22.4
M-X HOUSING WITH M0	37	112	318	783	967	434	389	384	443	401	377	374	373
M-X + OTHER PROJECTS	702	1480	2044	2876	3384	2337	2177	2192	2087	2002	2114	2132	2174
% ABOVE TO BASELINE	42.8	86.0	118.3	161.4	187.9	128.8	118.7	118.4	111.9	110.3	110.8	111.4	111.9
<b>ALTERNATIVE 5</b>													
M-X HOUSING WITH T0	941	2175	3403	4801	4789	3403	3014	3001	1984	1984	1984	1984	1984
% ABOVE TO BASELINE	57.3	129.2	201.3	272.4	248.7	198.2	144.4	108.1	104.3	103.1	102.9	102.9	102.9
M-X HOUSING WITH M0	737	2146	3426	4778	4783	3360	2974	1974	1949	1949	1949	1949	1947
M-X + OTHER PROJECTS	1392	3514	3170	4080	7144	3373	4342	3380	3413	3450	3483	3724	3746
% ABOVE TO BASELINE	97.1	200.8	298.8	307.1	394.4	290.0	248.7	193.4	193.4	193.4	193.2	193.2	192.8
<b>ALTERNATIVE 6</b>													
M-X HOUSING WITH T0	941	2175	3403	4801	4789	3403	3014	3001	1984	1944	1904	1904	1904
% ABOVE TO BASELINE	57.3	129.2	201.3	272.4	248.7	198.2	144.4	108.1	104.3	103.1	102.9	102.9	102.9
M-X HOUSING WITH M0	737	2146	3426	4778	4783	3360	2974	1974	1949	1949	1949	1949	1947
M-X + OTHER PROJECTS	1392	3514	3170	4080	7144	3373	4342	3380	3413	3450	3483	3724	3746
% ABOVE TO BASELINE	97.1	200.8	298.8	307.1	394.4	290.0	248.7	193.4	193.4	193.4	193.2	193.2	192.8

need later declines to reach a total of 1,984 units by 1994, including 1,190 single-family units, 397 multi-family, and 397 mobile homes. Table 2.1.7-1 shows that while the requirements for single-family units, with the exception of one year, 1989, are positive; the requirements for mobile homes drop off sharply after the peak-year and those for multi-family units also decline. These surpluses will provide a problem to the Beaver County housing market, whose own growth is not sufficient to absorb them. As with the Proposed Action, the presence of other projects will combine with M-X to exacerbate conditions in local housing markets, particularly in the peak-years. For instance, other projects bring the peak-year combined housing requirement to 6,888 units in 1985, some 387 percent above baseline, compared to 272 percent above with M-X alone (Table 2.1.7-3). This is a major impact. Long-term combined requirements are similarly inflated.

Other alternatives will also have housing impacts on Beaver County, even without an operating base near Milford. For instance, under Alternatives 1, 3 and 4, there are expected to be spillover effects in Beaver County from the Operating Base at Beryl in Iron County, that will produce long-term housing requirements. For both Alternatives 3 and 4 this will mean a long-term need for some 435 mobile homes (Table 2.1.7-1); whereas, under Alternative 1, some 319 housing units (192 single-family, 64 multi-family, and 64 mobile homes) are required as a result of spillover from Beryl. Likewise, there is some spillover from the operating base at Delta under Alternative 2; but its very small, requiring only 27 mobile homes in 1994 (Table 2.1.7-1). The split-deployment alternative is the one that will have the least impact on Beaver County, with a peak-year requirement of 840 mobile homes, that is dissipated two years later. Other projects will, nevertheless, add to these short-lived requirements (Table 2.1.7-3).

Wherever an operating base is located in Beaver County, Iron County can expect to experience spillover effects that will be permanent in nature. This is true for the Proposed Action, and Alternatives 5 and 6. For the Proposed Action, Iron County will have a long-term requirement of 475 housing units as a result of spillover from Milford, comprised of 285 single-family units, 95 multi-family units, and 95 mobile homes. Under Alternatives 5 and 6, Iron County's long-term requirements will involve 662 housing units, comprised of 397 single-family, 132 multi-family, and 132 mobile homes.

#### **EFFECTS ON MILFORD COMMUNITY INFRASTRUCTURE (2.1.8)**

M-X deployment Proposed Action and Alternatives 5 and 6 identify a potential operating base location in the vicinity of Milford (Beaver County), Utah. Construction of such a facility would result in the in-migration of construction workers and their families in the short-term, as well as long-term base personnel. This population immigration will place additional demands on community infrastructure necessitating the recruitment of more teachers, health care personnel, law enforcement and fire personnel. There will also be impacts on parks and recreation and on basic utilities such as water and solid waste disposal, creating the need for expanded or new facilities. The accommodation of M-X-related needs for community services will be fulfilled primarily by Beaver County. Neighboring counties, for the most part, will experience lesser demands of a temporary nature. For that reason the following discussion will concentrate upon the effects likely to be experienced in Beaver County under the Proposed Action and Alternatives 5 and 6.

## Education

Table 2.1.8-1 presents the number of school-aged children expected to enter the Beaver County School District by class grouping for each M-X alternative between the years 1982 and 1994 on an annual basis. As indicated, substantial initial enrollment additions to the Beaver County School District would occur in 1982 under Alternatives 5 and 6. Under the Proposed Action, initial enrollments would occur somewhat later, in 1984. Under Alternatives 5 and 6, it is expected that as many as 780 enrollments may be generated as a result of M-X-related population in-migration, which constitutes a 65.0 percent increase over the approximately 1,200 students anticipated in projected baseline. It is evident that the Beaver County School District which maintains an enrollment capacity of approximately 1,700 students would experience problems with meeting enrollment demands in 1982. Under the Proposed Action, the initial number of M-X-attributable enrollments would be approximately 270 (in 1984), an increase of 21.0 percent over the nearly 1,300 pupils expected under normal growth conditions.

Peak levels of enrollments generated by M-X into Beaver County would occur in 1987. Depending on which of these alternatives in which an operating base may occur near Milford is ultimately selected, M-X-attributable enrollments may increase the number of enrollments in Beaver County by up to between 345.0 and 365.0 percent over normal projected growth conditions - which indicate that approximately 1,340 local school-aged children would be utilizing educational facilities in the district.

Subsequent to peak year enrollment demands resulting from M-X, enrollment levels can be expected to stabilize, the level of which may be useful for long-range educational planning purposes. Table 2.1.8-1 indicates that under Alternatives 5 and 6 the Beaver County School District would require adequate facilities to accommodate approximately 6,350 pupils, of which approximately 77.0 percent would be attributable to M-X. Under the Proposed Action, the long-term requirement for educational services would be approximately 5,200 pupils of which approximately 72.0 are M-X-attributable. Under all other M-X deployment alternatives in which an operating base would not be situated near Milford, long-term effects would be greatly reduced. The respective percentage increases over baseline growth under Alternatives 1, 2 and 3 would range between 15.0 and 25.0 percent. Under Alternative 8A, no long-term enrollment demands are expected. Regardless of which M-X deployment in which an operating base would be located near Milford is selected, it is evident that given the inadequate posture of existing facilities, M-X-related enrollments will certainly accentuate the need for both additional facilities and personnel.

The number of teachers required to accommodate M-X-related enrollment demands in Beaver County for Alternatives 5 and 6 in the long-term approximate 210, while for the Proposed Action, approximately three-quarters of this number would be required. This is in addition to the 65 teachers expected to be required under long-term normal growth conditions. The annual projected baseline and M-X-related teacher requirements between 1982 and 1994 for each grade group is expressed in Table 2.1.8-2 for the Beaver County School District.

In Beaver County, the proportion of total enrollments and teachers required attributable to other projects in the area when compared to those attributable to



Table 2.1.8-1. Projected baseline and M-X induced school enrollments by grade level, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / NUMBER PUPILS BY GRADE LEVEL	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASLINE ENROLLMENTS</b>	1211	1242	1274	1313	1359	1341	1353	1346	1377	1392	1400	1422	1434
<b>PROPOSED ACTION</b>													
N-6	0	0	134	609	1514	2008	2237	2370	2023	1849	1849	1849	1849
7-9	0	0	48	304	738	1004	1119	1183	1012	935	935	935	935
10-12	0	0	48	304	740	1004	1119	1183	1012	935	935	935	935
TOTAL M-X RELATED	0	0	271	1217	2952	4016	4459	4736	4047	3729	3729	3729	3729
M-X PLUS BASLINE	1211	1242	1545	2530	4311	5337	5812	6182	5824	5118	5118	5118	5118
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	21.2	92.7	228.1	299.3	330.8	346.9	293.9	248.4	248.4	248.4	248.4
<b>ALTERNATIVE 1</b>													
N-6	0	0	91	340	648	702	752	770	720	684	684	684	684
7-9	0	0	24	180	374	514	574	584	514	484	484	484	484
10-12	0	0	24	180	374	514	574	584	514	484	484	484	484
TOTAL M-X RELATED	0	0	139	694	1396	1790	1900	1928	1748	1652	1652	1652	1652
M-X PLUS BASLINE	1211	1242	1381	2224	3707	4526	5002	5170	5000	4766	4766	4766	4766
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	11.1	69.6	273.8	337.4	369.4	384.6	363.4	341.9	341.9	341.9	341.9
<b>ALTERNATIVE 2</b>													
N-6	20	31	100	448	938	1270	1523	1666	181	170	169	169	169
7-9	10	23	75	324	649	935	1114	1114	91	85	85	85	85
10-12	10	23	75	324	649	935	1114	1114	91	85	85	85	85
TOTAL M-X RELATED	40	77	248	1096	2236	3140	3753	3894	262	240	240	240	240
M-X PLUS BASLINE	1251	1319	1523	2620	4547	5866	6677	6884	1818	1740	1740	1740	1740
PERCENT DIFFERENCE FROM BASLINE	3.3	6.2	22.4	68.2	209.9	40.2	34.3	33.1	24.4	24.4	24.4	24.4	24.4
<b>ALTERNATIVE 3</b>													
N-6	20	31	100	448	938	1270	1523	1666	181	170	169	169	169
7-9	10	23	75	324	649	935	1114	1114	91	85	85	85	85
10-12	10	23	75	324	649	935	1114	1114	91	85	85	85	85
TOTAL M-X RELATED	40	77	248	1096	2236	3140	3753	3894	262	240	240	240	240
M-X PLUS BASLINE	1291	1344	1598	2916	5204	6801	7967	8278	1740	1735	1740	1740	1740
PERCENT DIFFERENCE FROM BASLINE	3.3	6.2	23.4	68.2	209.9	40.2	34.3	33.1	24.4	24.4	24.4	24.4	24.4
<b>ALTERNATIVE 4</b>													
N-6	20	31	100	448	938	1270	1523	1666	181	170	169	169	169
7-9	10	23	75	324	649	935	1114	1114	91	85	85	85	85
10-12	10	23	75	324	649	935	1114	1114	91	85	85	85	85
TOTAL M-X RELATED	40	77	248	1096	2236	3140	3753	3894	262	240	240	240	240
M-X PLUS BASLINE	1331	1394	1647	3332	6053	7936	9081	9472	1740	1735	1740	1740	1740
PERCENT DIFFERENCE FROM BASLINE	3.3	6.2	23.4	68.2	209.9	40.2	34.3	33.1	24.4	24.4	24.4	24.4	24.4
<b>ALTERNATIVE 5</b>													
N-6	20	31	100	448	938	1270	1523	1666	181	170	169	169	169
7-9	10	23	75	324	649	935	1114	1114	91	85	85	85	85
10-12	10	23	75	324	649	935	1114	1114	91	85	85	85	85
TOTAL M-X RELATED	40	77	248	1096	2236	3140	3753	3894	262	240	240	240	240
M-X PLUS BASLINE	1371	1444	1747	3724	6981	9171	10395	10786	1740	1735	1740	1740	1740
PERCENT DIFFERENCE FROM BASLINE	3.3	6.2	23.4	68.2	209.9	40.2	34.3	33.1	24.4	24.4	24.4	24.4	24.4
<b>ALTERNATIVE 6</b>													
N-6	20	31	100	448	938	1270	1523	1666	181	170	169	169	169
7-9	10	23	75	324	649	935	1114	1114	91	85	85	85	85
10-12	10	23	75	324	649	935	1114	1114	91	85	85	85	85
TOTAL M-X RELATED	40	77	248	1096	2236	3140	3753	3894	262	240	240	240	240
M-X PLUS BASLINE	1411	1494	1847	4120	8019	10406	11919	12482	1740	1735	1740	1740	1740
PERCENT DIFFERENCE FROM BASLINE	3.3	6.2	23.4	68.2	209.9	40.2	34.3	33.1	24.4	24.4	24.4	24.4	24.4

SOURCE: IBM SCIENCES, 1-NOV-80

M-X plus baseline is substantial. For example, for Alternatives 5 and 6, under which a large operating base may be located near Milford, of the total number of additional enrollments which the Beaver County School District might expect as a result of M-X and other projects, 20.0 percent of the total cumulative effects are attributable to other projects. This indicates that the existing inadequate capability of the district to provide education services to the extent required by M-X would be further compounded when also considering other project requirements.

### **Effects on Health Care**

M-X project related requirements for health care personnel and facilities are shown in Table 2.1.8-3 for Beaver County. Under Alternatives 5 and 6 with the first base located near Milford, the need for health care personnel peaks in 1985, when 17 physicians, 50 nurses, 5 dentists, 3 mental health personnel and 42 additional hospital beds would be required. These requirements would be somewhat smaller under the Proposed Action when the second base is proposed near Milford. M-X-related peak demand increases the normal baseline growth requirements by almost 250 percent and would put severe strain on the local health care facilities.

This situation would be further exacerbated if projects other than M-X are implemented during the same time period as M-X. The cumulative requirements during the peak year could then be as high as 350.0 percent of the normal growth requirements of 32 health care personnel and 20 hospital beds. Even during the long-term, the cumulative requirements could be almost 50.0 percent more than the normal growth requirements, necessitating mitigating measures to ensure adequate health care for the county residents.

Location of a base near Milford would have some spillover population in Iron and Millard Counties in Utah. The peak year demand in these counties would be 11 additional health care personnel and 7 hospital beds in Iron, and 7 health care personnel and 5 beds in Millard County.

### **Public Safety (Milford)**

Tables 2.1.8-4 and 2.1.8-5 present the requirements for law enforcement and fire personnel in Beaver County resulting from the M-X project. As indicated, additional requirements for police and fire personnel will initially occur in 1984 under the Proposed Action and as early as 1982 under Alternatives 5 and 6. When the first operating base is located near Milford (Alternatives 5 and 6) the police and fire requirements expected initially (6 police and 4 fire personnel) amount to respectively, 66.7 and 57.1 percent more than what would be required under normal growth. These figures represent sudden and substantial increases in the need for services which may be difficult to meet in the first year of impacts.

Beaver County police and fire personnel requirements peak in 1986 and 1985, respectively, under both Alternatives 5 and 6. Under the Proposed Action the peak occurs in 1988 for police and in 1987 for fire personnel. The number of additional law enforcement personnel is expected in the peak year of Alternatives 5 and 6 to be 480.0 percent above the number projected to be needed under normal growth conditions. Such an increase will place burdens on the existing law enforcement system. Problems of crowded facilities, particularly jails, and of attracting and

Table 2.1.8-2. Projected baseline and M-X induced teacher requirements by grade level, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / NUMBER TEACHERS BY GRADE LEVEL	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASING REQUIREMENTS</b>	88	84	88	87	60	60	41	42	42	63	64	65
<b>PROPOSED ACTION</b>												
N-4	0	0	0	24	41	80	87	93	81	78	78	79
7-9	0	0	3	13	33	44	49	52	44	41	41	41
10-12	0	0	3	14	34	46	51	54	46	43	43	43
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	0	0	6	41	109	170	187	200	171	168	168	168
M-X PLUS BASELINE	88	84	94	110	160	220	234	242	217	211	211	211
<b>PERCENT DIFFERENCE FROM BASELINE</b>	0.0	0.0	19.0	25.4	26.7	30.7	32.1	32.2	24.9	24.6	24.6	24.6
<b>ALTERNATIVE 1</b>												
N-4	0	0	2	14	19	9	8	7	8	9	9	9
7-9	0	0	1	8	10	8	4	4	3	3	3	3
10-12	0	0	1	8	11	8	4	4	3	3	3	3
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	0	0	4	30	40	20	16	14	11	11	11	11
M-X PLUS BASELINE	88	84	98	118	150	190	200	204	208	209	209	209
<b>PERCENT DIFFERENCE FROM BASELINE</b>	0.0	0.0	11.1	34.1	44.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4
<b>ALTERNATIVE 2</b>												
N-4	1	2	4	18	22	11	9	9	7	7	7	7
7-9	0	1	2	10	12	4	5	5	4	4	4	4
10-12	0	1	2	10	12	4	5	5	4	4	4	4
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	1	4	8	38	46	19	19	19	15	15	15	15
M-X PLUS BASELINE	89	88	96	116	138	130	130	130	123	123	123	123
<b>PERCENT DIFFERENCE FROM BASELINE</b>	1.1	4.7	8.9	41.3	63.3	51.2	51.2	51.2	49.3	49.3	49.3	49.3
<b>ALTERNATIVE 3</b>												
N-4	1	1	4	10	22	11	9	9	7	7	7	7
7-9	0	1	2	10	12	4	5	5	4	4	4	4
10-12	0	1	2	10	12	4	5	5	4	4	4	4
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	1	4	8	38	46	19	19	19	15	15	15	15
M-X PLUS BASELINE	89	92	100	118	138	130	130	130	123	123	123	123
<b>PERCENT DIFFERENCE FROM BASELINE</b>	1.1	4.7	13.6	41.3	63.3	51.2	51.2	51.2	49.3	49.3	49.3	49.3
<b>ALTERNATIVE 4</b>												
N-4	1	1	4	10	22	11	9	9	7	7	7	7
7-9	0	1	2	10	12	4	5	5	4	4	4	4
10-12	0	1	2	10	12	4	5	5	4	4	4	4
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	1	4	8	38	46	19	19	19	15	15	15	15
M-X PLUS BASELINE	89	92	100	118	138	130	130	130	123	123	123	123
<b>PERCENT DIFFERENCE FROM BASELINE</b>	1.1	4.7	13.6	41.3	63.3	51.2	51.2	51.2	49.3	49.3	49.3	49.3
<b>ALTERNATIVE 5</b>												
N-4	1	1	4	10	22	11	9	9	7	7	7	7
7-9	0	1	2	10	12	4	5	5	4	4	4	4
10-12	0	1	2	10	12	4	5	5	4	4	4	4
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	1	4	8	38	46	19	19	19	15	15	15	15
M-X PLUS BASELINE	89	92	100	118	138	130	130	130	123	123	123	123
<b>PERCENT DIFFERENCE FROM BASELINE</b>	1.1	4.7	13.6	41.3	63.3	51.2	51.2	51.2	49.3	49.3	49.3	49.3
<b>ALTERNATIVE 6</b>												
N-4	1	1	4	10	22	11	9	9	7	7	7	7
7-9	0	1	2	10	12	4	5	5	4	4	4	4
10-12	0	1	2	10	12	4	5	5	4	4	4	4
<b>TOTAL M-X RELATED</b>												
TOTAL M-X RELATED	1	4	8	38	46	19	19	19	15	15	15	15
M-X PLUS BASELINE	89	92	100	118	138	130	130	130	123	123	123	123
<b>PERCENT DIFFERENCE FROM BASELINE</b>	1.1	4.7	13.6	41.3	63.3	51.2	51.2	51.2	49.3	49.3	49.3	49.3

SOURCE: FOR SCIENCE, 1-MAY-80

Table 2.1.8-3. Projected baseline and M-X related health services and hospital bed requirements, in Beaver assuming trend baseline.

ALTERNATIVE / REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>BASLINE</b>													
PHYSICIANS	6	7	7	7	7	7	7	7	7	8	8	8	8
REGISTERED NURSES	20	21	22	22	23	23	23	23	23	24	24	24	24
DENTISTS	2	2	2	2	2	2	2	2	2	2	2	2	2
MENTAL HEALTH PERSON	1	1	1	1	1	1	1	1	1	1	1	1	1
HOSPITAL BEDS	18	19	19	20	20	20	20	21	21	21	21	21	22
<b>PROPOSED ACTION</b>													
PHYSICIANS	0	0	1	5	9	12	11	8	5	3	3	3	3
REGISTERED NURSES	0	0	4	13	27	37	35	27	16	9	7	7	7
DENTISTS	0	0	0	1	2	2	2	1	1	1	1	1	1
MENTAL HEALTH PERSON	0	0	0	0	1	2	2	1	1	0	0	0	0
HOSPITAL BEDS	0	0	4	12	23	31	29	23	14	8	8	8	8
<b>ALTERNATIVE 1</b>													
PHYSICIANS	0	0	0	2	2	1	1	1	0	0	0	0	0
REGISTERED NURSES	0	0	0	3	4	3	3	2	1	1	1	1	1
DENTISTS	0	0	0	0	0	0	0	0	0	0	0	0	0
MENTAL HEALTH PERSON	0	0	0	0	0	0	0	0	0	0	0	0	0
HOSPITAL BEDS	0	0	0	4	5	3	3	2	1	1	1	1	1
<b>ALTERNATIVE 2</b>													
PHYSICIANS	0	0	0	2	2	0	0	0	0	0	0	0	0
REGISTERED NURSES	0	0	0	3	4	1	0	0	0	0	0	0	0
DENTISTS	0	0	0	0	0	0	0	0	0	0	0	0	0
MENTAL HEALTH PERSON	0	0	0	0	0	0	0	0	0	0	0	0	0
HOSPITAL BEDS	0	0	0	4	4	1	0	0	0	0	0	0	0
<b>ALTERNATIVE 3</b>													
PHYSICIANS	0	0	1	2	3	1	1	1	0	0	0	0	0
REGISTERED NURSES	0	1	3	5	6	4	4	4	2	2	2	2	2
DENTISTS	0	0	0	0	0	0	0	0	0	0	0	0	0
MENTAL HEALTH PERSON	0	0	0	0	0	0	0	0	0	0	0	0	0
HOSPITAL BEDS	0	1	2	5	6	4	4	3	2	2	1	1	1
<b>ALTERNATIVE 4</b>													
PHYSICIANS	0	0	1	2	3	1	1	1	0	0	0	0	0
REGISTERED NURSES	0	1	3	5	6	4	4	4	2	2	2	2	2
DENTISTS	0	0	0	0	0	0	0	0	0	0	0	0	0
MENTAL HEALTH PERSON	0	0	0	0	0	0	0	0	0	0	0	0	0
HOSPITAL BEDS	0	1	2	5	6	4	4	3	2	2	1	1	1
<b>ALTERNATIVE 5</b>													
PHYSICIANS	3	0	12	17	16	11	9	4	4	4	4	4	4
REGISTERED NURSES	11	25	39	50	47	34	26	12	12	12	12	12	12
DENTISTS	1	2	4	5	5	4	3	1	1	1	1	1	1
MENTAL HEALTH PERSON	0	1	2	3	3	2	1	0	0	0	0	0	0
HOSPITAL BEDS	0	20	31	42	41	31	23	11	11	11	11	11	11
<b>ALTERNATIVE 6</b>													
PHYSICIANS	3	0	12	17	16	11	9	4	4	4	4	4	4
REGISTERED NURSES	11	25	39	50	47	34	26	12	12	12	12	12	12
DENTISTS	1	2	4	5	5	4	3	1	1	1	1	1	1
MENTAL HEALTH PERSON	0	1	2	3	3	2	1	0	0	0	0	0	0
HOSPITAL BEDS	0	20	31	42	41	31	23	11	11	11	11	11	11

SOURCE: HDM SCIENCES, 1-NOV-80

Table 2.1.8-4. Projected baseline and M-X related requirements for law enforcement personnel by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / PERSONNEL REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASLINE REQUIREMENTS	9	9	9	10	10	10	10	10	10	10	10	10	11
PROPOSED ACTION													
M-X REQUIREMENTS	0	0	2	10	25	32	34	35	29	26	26	26	26
M-X PLUS BASELINE	9	9	11	20	35	42	44	45	39	36	36	36	37
PERCENT DIFFERENCE FROM BASELINE	0.0	0.0	20.4	99.0	244.4	310.0	326.5	333.1	273.7	242.7	240.0	237.6	235.7
ALTERNATIVE 1													
M-X REQUIREMENTS	0	0	0	6	7	3	2	2	2	1	1	1	1
M-X PLUS BASELINE	9	9	9	16	17	13	12	12	12	11	11	11	12
PERCENT DIFFERENCE FROM BASELINE	0.0	0.0	0.0	59.4	68.4	29.1	19.2	19.0	18.9	9.3	9.2	9.1	9.1
ALTERNATIVE 3													
M-X REQUIREMENTS	0	0	2	7	9	4	3	3	2	2	2	2	2
M-X PLUS BASELINE	9	9	11	17	19	14	13	13	12	12	12	12	13
PERCENT DIFFERENCE FROM BASELINE	0.0	0.0	20.4	69.3	88.0	38.8	28.8	28.5	18.9	18.7	18.5	18.3	18.1
ALTERNATIVE 4													
M-X REQUIREMENTS	0	0	2	7	9	4	3	3	2	2	2	2	2
M-X PLUS BASELINE	9	9	11	17	19	14	13	13	12	12	12	12	13
PERCENT DIFFERENCE FROM BASELINE	0.0	0.0	20.4	69.3	88.0	38.8	28.8	28.5	18.9	18.7	18.5	18.3	18.1
ALTERNATIVE 5													
M-X REQUIREMENTS	6	15	28	43	48	41	41	39	34	34	34	34	34
M-X PLUS BASELINE	15	24	37	53	56	51	51	49	44	44	44	44	45
PERCENT DIFFERENCE FROM BASELINE	64.4	157.0	285.1	425.7	469.2	397.2	393.7	371.1	320.9	317.3	313.8	310.7	308.2
ALTERNATIVE 6													
M-X REQUIREMENTS	6	15	20	43	40	41	41	39	34	34	34	34	34
M-X PLUS BASELINE	15	24	37	53	50	51	51	49	44	44	44	44	45
PERCENT DIFFERENCE FROM BASELINE	64.4	157.0	285.1	423.7	469.2	397.2	393.7	371.1	320.9	317.3	313.8	310.7	308.2

SOURCE: FOR SCIENCES. 1-NOV-80

Table 2.1.1.8-5. Projected baseline and M-X related requirements for fire protection personnel by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / PERSONNEL REQUIREMENTS	1983	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASLINE REQUIREMENTS	7	7	8	9	10	11	12	13	14	15	16	17	18
PROPOSED ACTION													
M-X REQUIREMENTS	0	0	1	2	3	4	5	6	7	8	9	10	11
M-X PLUS BASLINE	7	7	9	11	13	15	17	19	21	23	25	27	29
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	12.5	22.2	33.3	44.4	55.6	66.7	77.8	88.9	100.0	111.1	122.2
ALTERNATIVE 1													
M-X REQUIREMENTS	0	0	0	0	0	0	0	0	0	0	0	0	0
M-X PLUS BASLINE	7	7	8	9	10	11	12	13	14	15	16	17	18
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALTERNATIVE 2													
M-X REQUIREMENTS	0	0	1	2	3	4	5	6	7	8	9	10	11
M-X PLUS BASLINE	7	7	9	11	13	15	17	19	21	23	25	27	29
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	12.5	22.2	33.3	44.4	55.6	66.7	77.8	88.9	100.0	111.1	122.2
ALTERNATIVE 3													
M-X REQUIREMENTS	0	0	1	2	3	4	5	6	7	8	9	10	11
M-X PLUS BASLINE	7	7	9	11	13	15	17	19	21	23	25	27	29
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	12.5	22.2	33.3	44.4	55.6	66.7	77.8	88.9	100.0	111.1	122.2
ALTERNATIVE 4													
M-X REQUIREMENTS	0	0	1	2	3	4	5	6	7	8	9	10	11
M-X PLUS BASLINE	7	7	9	11	13	15	17	19	21	23	25	27	29
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	12.5	22.2	33.3	44.4	55.6	66.7	77.8	88.9	100.0	111.1	122.2
ALTERNATIVE 5													
M-X REQUIREMENTS	4	10	16	22	28	34	40	46	52	58	64	70	76
M-X PLUS BASLINE	11	17	24	31	38	45	52	59	66	73	80	87	94
PERCENT DIFFERENCE FROM BASLINE	57.1	142.9	200.0	257.1	314.3	371.4	428.6	485.7	542.9	600.0	657.1	714.3	771.4
ALTERNATIVE 6													
M-X REQUIREMENTS	4	10	16	22	28	34	40	46	52	58	64	70	76
M-X PLUS BASLINE	11	17	24	31	38	45	52	59	66	73	80	87	94
PERCENT DIFFERENCE FROM BASLINE	57.1	142.9	200.0	257.1	314.3	371.4	428.6	485.7	542.9	600.0	657.1	714.3	771.4

SOURCE: ION SCIENCE, 1-NOV-84

keeping enough qualified people to serve as deputies and police officers will be critical ones.

M-X-related fire personnel requirements reach a level 287.5 percent over the baseline in the peak years of Alternatives 5 and 6. An increase of such proportion will likely place a strain on the existing, barely adequate, fire protection services. The community fire protection forces in Beaver County are composed entirely of volunteers. With the influx of a large population the volunteer force may find it difficult to continue to provide adequate fire protection, particularly for scattered mobile homes and large commercial buildings. Under the Proposed Action police requirements are 350.0 percent and fire 212.5 percent over baseline in the peak year. The requirements expected under the other alternatives also represent large increases in the need for services which may be difficult to meet in the peak year. Iron County in the peak years will experience spillover population demands from Beaver County when the first base is located near Milford.

Subsequent to peak year demands on public safety services the out-migration of construction workers will occur, resulting in a continuing decrease at the county level in total personnel requirements attributable to M-X deployment. Under Alternatives 5 and 6 personnel requirements in Beaver County stabilize and reach a steady state in 1990 for police personnel and in 1989 for fire personnel. This is the level of impact which can be most usefully mitigated through long-range planning. The aforementioned tables indicate the number of police and fire personnel that will be required in the long-term and percent over baseline requirements that they represent. Significant long-term effects are expected only under the Proposed Action and Alternatives 5 and 6. In Beaver County long-term needs can possibly be accommodated with sufficient advance planning and funding, however, the level of need will require substantial and permanent expansion of police and fire facilities and personnel.

### **Parks and Recreation**

M-X-induced population immigration into the Milford area will create an increased demand for both urban and regional parks and recreational facilities in Beaver County. This increase in demand could stress existing urban facilities. To meet the increased needs, recreation planning capabilities, funds and land will be required. The land requirements for expansion of local recreational facilities are presented in Table 2.1.8-6.

The projected population growth due to M-X would increase the peak year land requirements for recreation and parks by 88 acres and long-term requirements by 36 acres in Beaver County, if Milford is chosen as the site for the first base, and by 67 and 27 acres respectively if it is chosen as the site for the second base. The other major projects in the area are not expected to add to these requirements very significantly. Additional rural acreage may be required for such recreational pursuits as off-road vehicular activity in order to spare habitats of rare and endangered species of plants and wildlife.

The U.S. Forest Service could open more lands for informal outdoor activities such as hunting, fishing and camping. Also, through subdivision and Planned Unit Development ordinances, a community can require certain amounts of recreation or open space in housing and mobile home development.

Table 2.1.8-6. Projected M-X related land requirements for parks and playgrounds, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / LAND REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
PROPOSED ACTION													
PLAYGROUNDS	0	0	0	4	0	11	10	7	4	4	4	4	4
NEIGHBORHOOD PARKS	0	0	0	4	11	14	13	11	8	4	4	4	4
COMMUNITY PARKS	0	0	0	18	34	42	40	34	23	17	17	17	17
TOTAL	0	0	0	26	53	67	63	54	37	27	27	27	27
ALTERNATIVE 1													
PLAYGROUNDS	0	0	0	2	3	2	1	1	1	1	1	1	1
NEIGHBORHOOD PARKS	0	0	0	3	4	2	2	2	1	1	1	1	1
COMMUNITY PARKS	0	0	0	0	11	4	4	5	4	4	4	4	4
TOTAL	0	0	0	12	18	16	9	8	6	6	6	6	6
ALTERNATIVE 2													
PLAYGROUNDS	0	0	1	3	3	2	2	2	1	1	1	1	1
NEIGHBORHOOD PARKS	0	1	1	4	4	3	2	2	2	2	2	2	2
COMMUNITY PARKS	1	2	4	11	13	8	7	7	6	5	5	5	5
TOTAL	1	3	6	18	20	13	11	11	9	8	8	8	8
ALTERNATIVE 3													
PLAYGROUNDS	0	0	1	3	3	2	2	2	1	1	1	1	1
NEIGHBORHOOD PARKS	0	1	1	4	4	3	2	2	2	2	2	2	2
COMMUNITY PARKS	1	2	4	11	13	8	7	7	6	5	5	5	5
TOTAL	1	3	6	18	20	13	11	11	9	8	8	8	8
ALTERNATIVE 4													
PLAYGROUNDS	3	4	10	14	14	10	8	4	4	4	4	4	4
NEIGHBORHOOD PARKS	4	8	13	18	18	13	11	8	7	7	7	7	7
COMMUNITY PARKS	11	23	40	54	55	40	34	23	23	23	23	23	23
TOTAL	18	35	63	86	87	63	53	37	34	34	34	34	34
ALTERNATIVE 5													
PLAYGROUNDS	3	4	10	14	14	10	8	4	4	4	4	4	4
NEIGHBORHOOD PARKS	4	8	13	18	18	13	11	8	7	7	7	7	7
COMMUNITY PARKS	11	23	40	54	55	40	34	23	23	23	23	23	23
TOTAL	18	35	63	86	87	63	53	37	34	34	34	34	34

SOURCE: IBM SCIENCE. 1-NOV-80



## **Solid Waste Disposal**

M-X-induced immigration to the Milford area will create additional quantities of solid wastes not only in residences but also in the additional business and governmental activities required to support this population increment in Beaver County.

If Milford is chosen as the site for the first base, the M-X-induced population demands for solid-waste disposal land area will begin in 1982. About 27 acres of landfill areas will provide for the M-X-induced solid waste stream in Beaver County and, in fact, provide for all major-project induced solid wastes through 2009, that is over the 20-year operational life of the M-X defense system.

If on the other hand, Milford is chosen to be the site for the second base, the M-X-induced population demands for solid waste disposal land area would be reduced to 8 acres of landfill area.

The effect of M-X OB site on Beaver County land requirements for solid waste disposal are illustrated in Table 2.1.8-7.

## **EFFECTS ON QUALITY OF LIFE (2.1.9)**

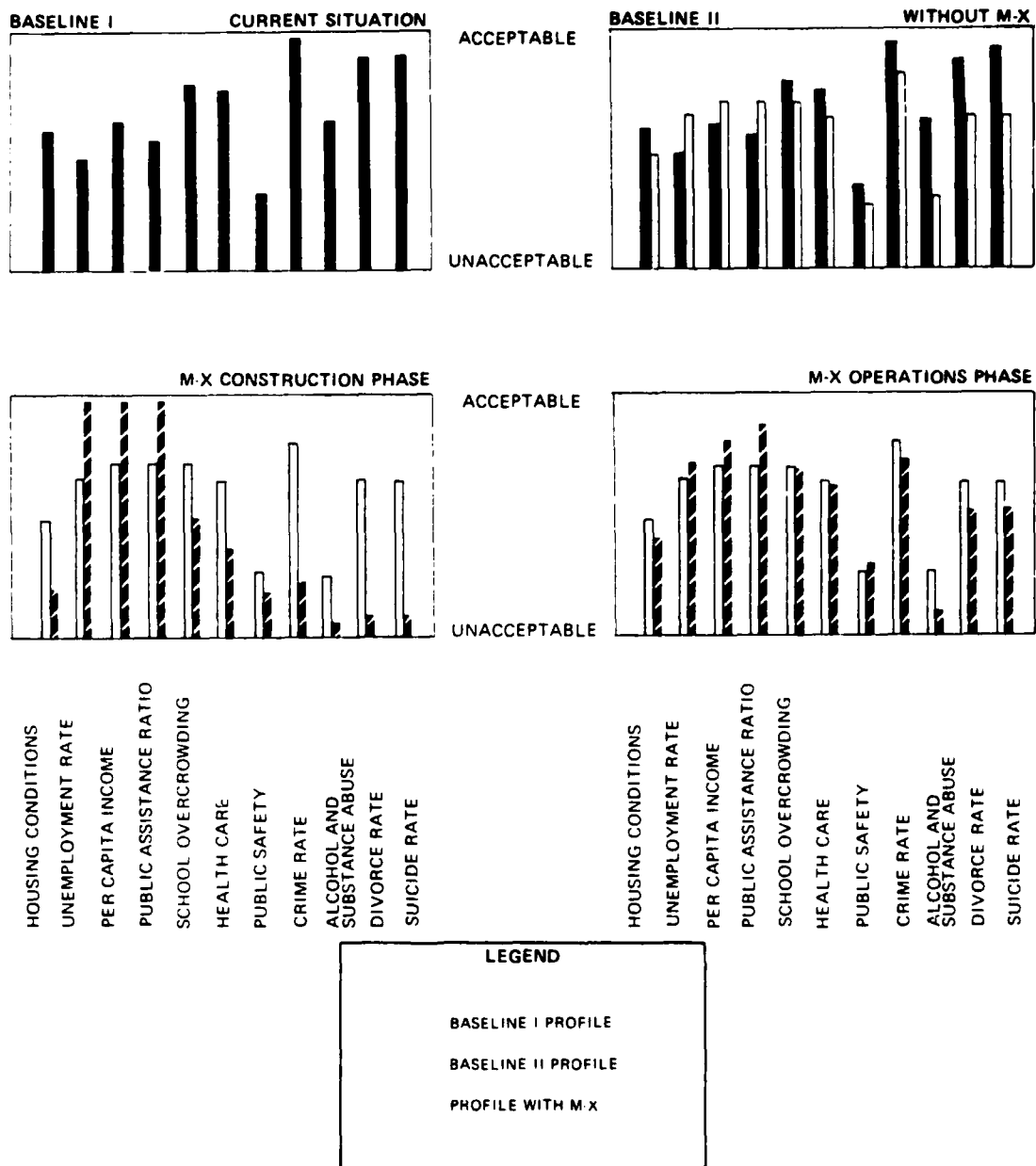
The impact projections are conditional in that they are contingent on the actions taken by policy makers and also on the basic assumptions concerning factors such as the levels and pace of development which will occur. Moreover, the components of quality of life are numerous and complex and there is a great deal of uncertainty as to the probable outcomes since the basic models are lacking. Individual preference functions are unknown and community preference functions are hard to ascertain. Nevertheless, an attempt has been made to provide comparisons, within the framework of certain assumptions, suggestive of the trend of growth impacts on the communities in question.

The rapid population growth that can be anticipated if an operating base is located in the vicinity of Milford will result in many objective and subjective changes in the quality of life in the surrounding communities. Figure 2.1.9-1 attempts to show potential changes in the quality of life that might reasonably be expected. The histograms portray an assessment of the impact on the quality of life, as measured by a particular index, in a range from acceptable to unacceptable. The four segments of the figure depict: (a) Baseline I, which simply portrays the county's particular index value as a proportion of the corresponding state index value (where acceptable denotes a value that is 50 percent better than the state figure, and unacceptable represents a value that is 100 percent worse than the state figure), for 11 quality of life indices; (b) Baseline II, the anticipated changes in these indices without M-X deployment in the county, but with the presence of other known projects; (c) anticipated changes during the M-X construction phase over Baseline II; and (d) anticipated changes during the M-X operations phase compared to Baseline II. Changes in the indices are assumed to be related to the rapidity of population growth. Since the quality of life literature points to a rapid deterioration of social organization with boomtown growth, it is assumed that such indices as crime, alcohol and substance abuse, divorce and suicide rates, may increase as much as four times the compound annual population growth rate. The economic well-being indices, e.g., per capita income, the unemployment rate, and the public

Table 2.1.8-7. Projected baseline and M-X related land requirements (acres) for solid waste disposal, by alternative, in Beaver assuming trend baseline.

ALTERNATIVE / LAND REQUIREMENTS	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
BASLINE REQUIREMENTS	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
PROPOSED ACTION													
M-X REQUIREMENTS	0.0	0.0	0.2	0.7	1.3	1.6	1.5	1.3	0.9	0.4	0.4	0.4	0.4
M-X PLUS BASLINE	0.7	0.7	0.9	1.5	2.1	2.4	2.3	2.1	1.7	1.2	1.2	1.2	1.2
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	27.1	92.4	169.4	206.7	192.0	163.0	113.3	74.7	73.8	73.1	72.5
ALTERNATIVE 1													
M-X REQUIREMENTS	0.0	0.0	0.0	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
M-X PLUS BASLINE	0.7	0.7	0.7	1.1	1.2	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
PERCENT DIFFERENCE FROM BASLINE	0.0	0.0	0.0	39.6	52.1	25.8	25.6	25.4	25.2	12.4	12.3	12.2	12.1
ALTERNATIVE 2													
M-X REQUIREMENTS	0.0	0.1	0.2	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
M-X PLUS BASLINE	0.7	0.8	0.9	1.2	1.3	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
PERCENT DIFFERENCE FROM BASLINE	0.0	14.0	27.1	52.8	63.2	38.8	38.4	38.1	25.2	24.9	24.6	24.4	24.2
ALTERNATIVE 4													
M-X REQUIREMENTS	0.0	0.1	0.2	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
M-X PLUS BASLINE	0.7	0.8	0.9	1.2	1.3	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
PERCENT DIFFERENCE FROM BASLINE	0.0	14.0	27.1	52.8	63.2	38.8	38.4	38.1	25.2	24.9	24.6	24.4	24.2
ALTERNATIVE 5													
M-X REQUIREMENTS	0.4	0.9	1.3	2.1	2.1	1.5	1.3	0.9	0.9	0.9	0.9	0.9	0.9
M-X PLUS BASLINE	1.1	1.6	2.2	2.9	2.9	2.3	2.1	1.7	1.7	1.7	1.7	1.7	1.7
PERCENT DIFFERENCE FROM BASLINE	57.2	125.6	203.6	277.2	273.7	193.8	166.4	114.2	113.3	112.0	110.8	109.7	108.8
ALTERNATIVE 6													
M-X REQUIREMENTS	0.4	0.9	1.3	2.1	2.1	1.5	1.3	0.9	0.9	0.9	0.9	0.9	0.9
M-X PLUS BASLINE	1.1	1.6	2.2	2.9	2.9	2.3	2.1	1.7	1.7	1.7	1.7	1.7	1.7
PERCENT DIFFERENCE FROM BASLINE	57.2	125.6	203.6	277.2	273.7	193.8	166.4	114.2	113.3	112.0	110.8	109.7	108.8

SOURCE: FOR SCIENCES, 4-NOV-80



2493-A-1  
7490-A

Figure 2.1.9-1. Potential changes in the quality of life profiles of Beaver County, Utah.

assistance ratio (the proportion of the population on public assistance of some kind), on the other hand, are assumed to change at only double the annual compound population change rate. The remaining indices, housing conditions (a measure of overcrowding), school overcrowding (the ratio of pupils to teachers), health care (doctors, dentists and registered nurses per 1,000 population, the number of hospital beds per 1,000 population), and public safety (ratio of police officers to population), collectively referred to as the community service indices, are all assumed to change inversely and linearly with the compound annual rate of population change.

#### **Quality of Life Changes Without M-X**

It is estimated that other projects, particularly a power plant in Millard County, alunite development, geothermal drilling exploration, and molybdenum mining and processing, will result in a compound annual growth rate of 16.3 percent between 1982 and 1986. This rapid pace of growth can be expected to make housing conditions, public safety and particularly the alcohol and substance abuse rate, already below Utah average standards, worse (Figure 2.1.9-1, upper right quadrant, which shows the Baseline II profile over Baseline I). Health care services and two of the social disorganization indices, the divorce rate and suicide rate, are likely to deteriorate and fall below state averages for these indices. The prospect for an increase in crime rates is fairly certain with this pace of population growth, but since Beaver County's baseline rate was only half that of the State's, the County should still have a better than average ranking on this index. Unemployment can be anticipated to decline and per capita incomes to improve with a 16 percent annual growth rate, thus considerably improving Beaver County's previously below Utah's average standing on these economic well being indices. The same will be true of the public assistance ratio index.

#### **Quality of Life During the M-X Construction Phase**

During the construction phase, assuming an operating base is located near Milford, a peak cumulative influx of 24,000 additional people is projected, resulting in a peak cumulative population change of 473 percent over Baseline II in 1986. Up to the peak year, population will be growing at a compound annual rate of 38 percent. Clearly, this extremely rapid pace will cause a serious, albeit temporary, deterioration in housing conditions, and the quality of community services, which can be expected to be severely overtaxed during this construction period. Such a rapid pace of growth is also certain to be reflected in higher crime, alcohol and substance abuse, divorce, and even suicide rates as social organization is tested with the rapid influx of culturally, ethnically and religiously heterogeneous groups that are likely to overwhelm the traditional values and ways of life of local communities (Figure 2.1.9-1, lower left quadrant).

On the other hand, a sharp and significant rise in the economic well being indices will greatly enhance Beaver County's standing on this quality of life dimension (Figure 2.1.9-1, lower left quadrant). Job opportunities, a key component of the quality of life perceptions of rural residents, should improve markedly, along with a reduction in the public assistance dependent population. Per capita incomes can be expected to rise considerably as a result (Figure 2.1.9-1, lower left quadrant).

### **Quality of Life During the M-X Operations Phase**

By 1992, the steady-state M-X-related population influx will have leveled off at some 17,000 additional people, representing a 318 percent increase over baseline population in that year. It will have taken 10 years to attain this level, indicating a compound annual growth rate of 10.8 percent. This overall rate of growth, while very substantial in and of itself, is significantly less than during the construction phase and so the effects, while still considerable, can be expected to be less marked. Housing conditions, and community services will not be as severely taxed, but will still be below state average standards. The school overcrowding index, initially above the Utah value, will probably be somewhat below the Utah figure. An 11 percent rate of growth, and such a large overall change in population numbers, is still likely to manifest itself in considerable social disorganization, leaving Beaver County worse off than before, but nowhere as badly off as during the construction phase (Figure 2.1.9-1, lower right quadrant). Reductions in the unemployment rate and the proportion of the population on public assistance, together with increases in per capita income will, in all probability, not be as pronounced as during the construction phase, but will nevertheless leave Beaver County better off than without M-X, and indeed for the latter two indices at least, better off than the Utah baseline figures.

### **EFFECTS ON ENERGY (2.1.10)**

Construction and operation of the M-X defense system operating base in the vicinity of Milford will require substantial improvements in energy transportation capabilities. Development of the required energy handling facilities must be in concert with M-X system construction.

Milford is located in an area that has no natural gas service. If services were extended into the area, the supplier could be Mountain Fuel Supply (MFS), Salt Lake City, although no plans exist for expansion. Pacific Gas Transmission (PGT), a subsidiary of Pacific Gas and Electric, San Francisco, has proposed to build a 30-in., high-pressure gas transmission line from Kemmerer, Wyoming and Bonanza, Utah, joining east of Provo, Utah, near Strawberry Reservoir, continuing along Interstate 15 through Cedar City, Utah and Las Vegas, Nevada to southern California. This line will have sufficient capacity to transport natural gas to Milford, which is located approximately 2 mi west of the proposed pipeline route.

The electric demand in the Milford area due to the M-X operating base and its related population increase is projected to be about 39 MW. Presently Milford constitutes a load of approximately 5 MW and is supplied by two 46-KV lines. Construction of new transmission and distribution facilities are required. A concerted effort must be made by the Air Force to schedule the construction of the operating base with the IPP project, to assure that electrical power is available when required. See Section 5.2 of the Power and Energy Technical Report for detailed information.

### **Mitigations**

Careful siting, taking into account the environmental restrictions and concerns, can mitigate the potential impacts of both fuel and power facilities. Coordination with the utility companies can assure minimum impact on current electrical power and fuel users and assure that the M-X system becomes operational

as planned. Similarly, impacts on fuel availability can be mitigated by timely adjustment of allocations. Alternate energy system development and energy conserving construction will reduce external energy demands.

#### **EFFECTS ON TRANSPORTATION (2.1.11)**

The population increases associated with construction and operation of an operating base near Milford would have a corresponding impact on traffic in the surrounding area. In general, the impacts would be similar to those discussed for the Beryl site in Section 2.1.11. The largest amount of offbase development is expected to occur in Milford. The community of Milford and the road connection between it and the base would be significantly affected by construction and operation of the operating base. Traffic along the road between the two would be high. Since a significant portion of off-base growth is also expected to occur in Minersville, Beaver, Cedar City and the other small communities south and east of Milford, improvement of the existing county road between Minersville and the proposed site could direct a significant portion of traffic to that route that would otherwise have to pass through Milford. Under the Proposed Action nearly 10,000 trips per day will be made between the base and neighboring communities. About 20 percent more would use it under Alternative 5 in which Milford would be the first operating base. Figures 2.1.11-1 and 2.1.11-2 present anticipated 1992 traffic for the two scenarios.

The community of Milford would more than double in size under anticipated growth scenarios. Increases in traffic would be proportioned to overall growth. The anticipated in-migration of over 1,800 new households into the area would generate around 18,000 trips, or traffic movements daily. Provisions to accommodate this growth, including new streets as well as new housing, would have to be developed. Good planning and orderly development can prevent many traffic problems from occurring, but road improvements will undoubtedly have to be made at numerous locations on the existing street system to accommodate the anticipated traffic. Where these improvements would be needed will depend upon the specific growth patterns that develop.

The community of Minersville will also experience an increase in traffic both from new residences and from traffic passing through it between Beaver and Cedar City and the operating base. Some localized traffic problems requiring improvements will likely occur.

#### **EFFECTS ON NATIVE AMERICANS (2.1.12)**

Nothing is currently known about possible uses of the OB siting area by contemporary Indians for hunting, gathering, or other traditional activities. An accurate assessment of impacts associated with base construction in this area must await the identification of specific sensitivity areas by local Southern Paiutes.

Archaeological surveys will precede construction activities in all areas of proposed ground disturbance. As part of the mitigation program, Southern Paiutes from the Cedar City and Kanosh bands should be provided the opportunity to independently evaluate these areas. This measure will ensure that all cultural resources are properly inventoried. Consultation with these tribal governments should continue through the construction period to develop acceptable measures for mitigating unavoidable impacts to culturally sensitive sites and features.

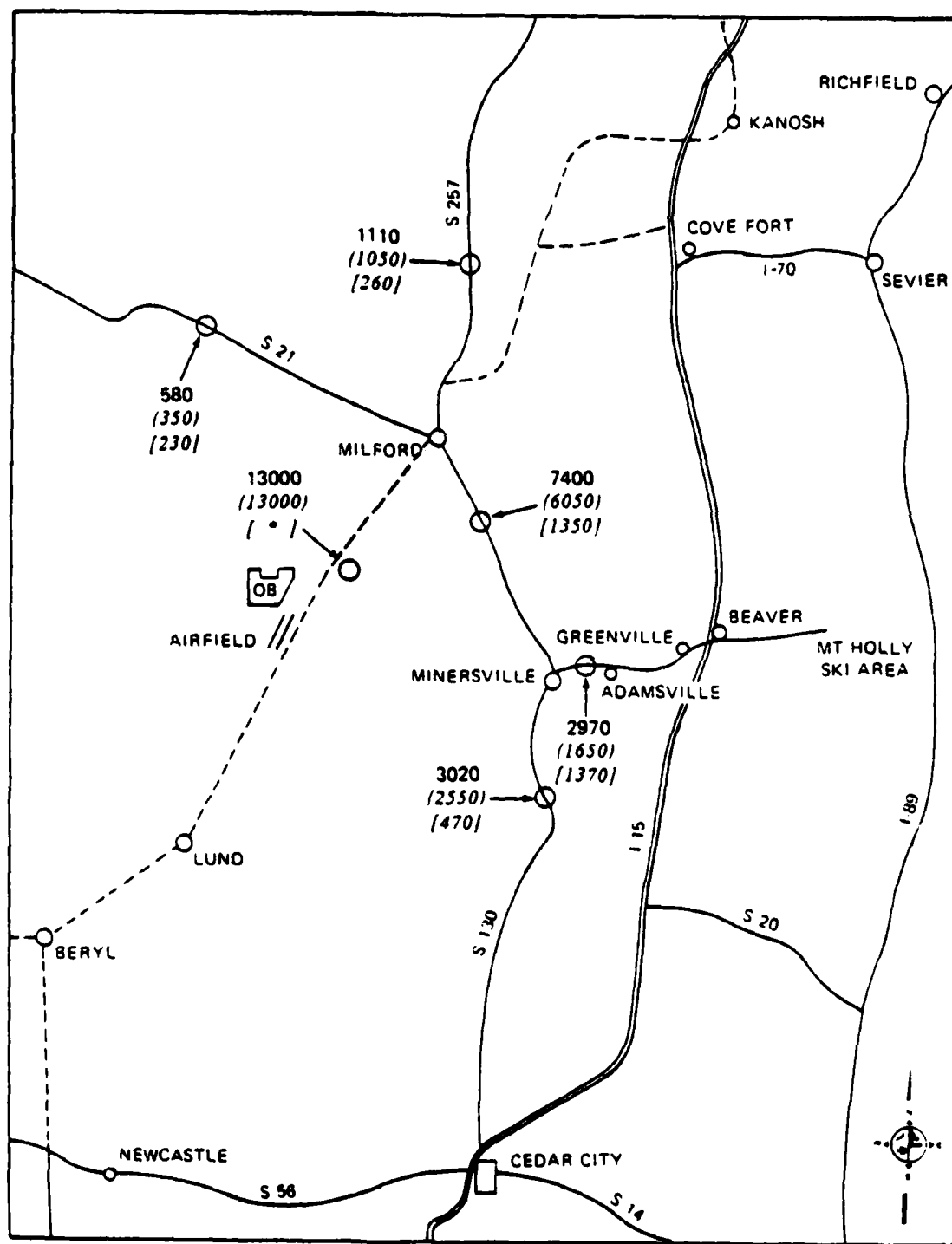
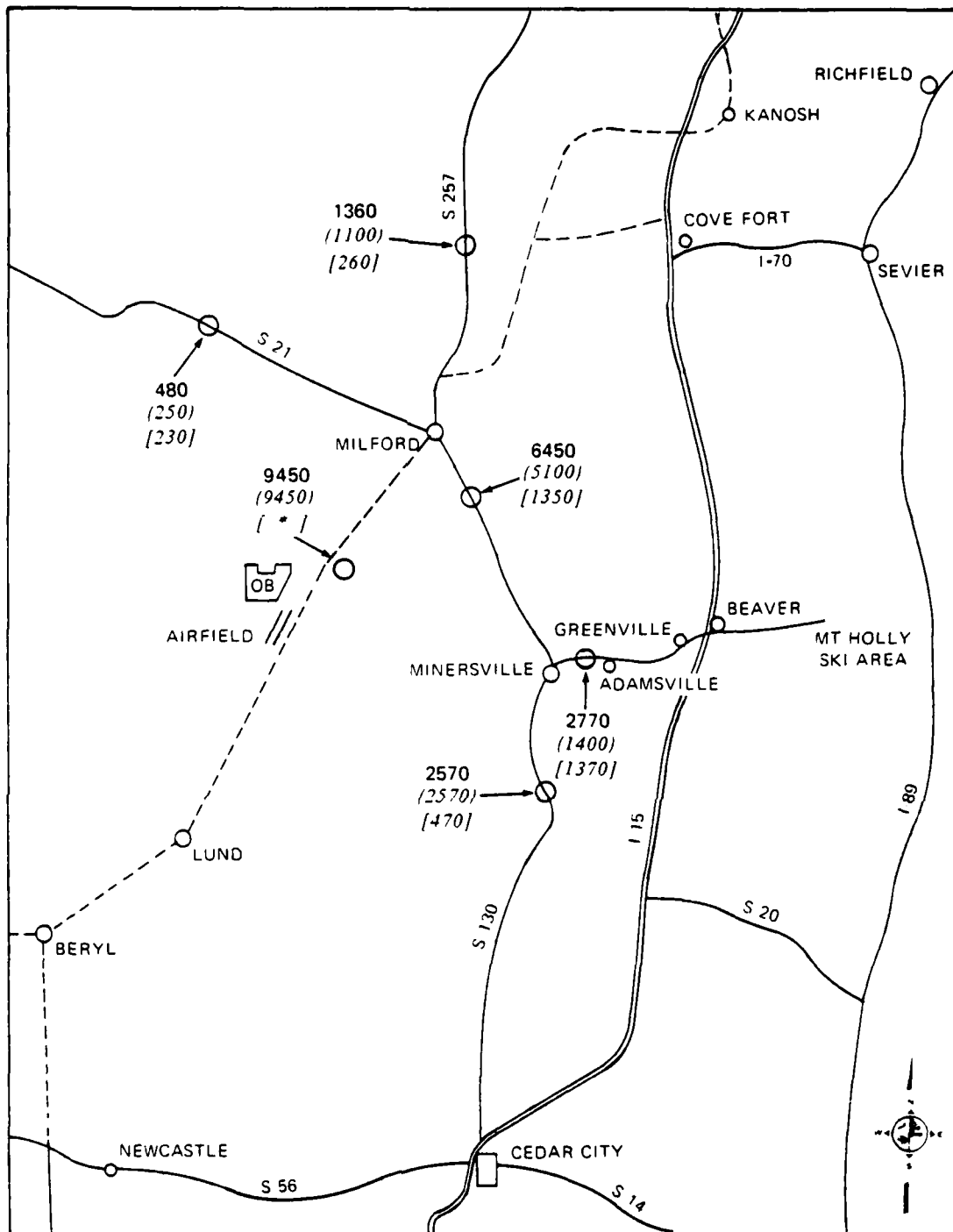


Figure 2.1.11-1. Projected traffic volumes in the vicinity of Milford, assuming first operating base.



LEGEND    000    TOTAL 1992 TRAFFIC  
           (000)    MX TRAFFIC  
           [000]    1992 TRAFFIC WITHOUT MX

SCHEMATIC: NOT TO SCALE

2573-A-2

Figure 2.1.11-2. Projected traffic volumes in the vicinity at Milford, assuming second operating base.



Currently, there are no Indian reserves in close proximity of the Milford proposed OB site. However, the recent (April 1980) reinstatement of the Utah Southern Paiutes to federal trusteeship has implications for proposed land use in Beaver County. Public Law 96-227 provides that the five bands of Southern Paiutes which were terminated in 1954 be reinstated and that their reservation lands be restored to the extent possible. Where original reservation lands cannot be restored, the law provides for up to 15,000 acres of land to be acquired; Beaver County is one of the five Utah counties from which land can be withdrawn for reservation restoration.

The Indian Peaks reservation, created in 1915, was located about 50 mi west of Milford in Beaver County. The reservation lands, about 9,000 acres, were purchased by the state of Utah when the Indians, shortly after termination, found they could not pay the property taxes. It is possible that the original reservation lands could be restored to the Indian Peaks band. The state converted the land into a Game Management area and the entire acreage is intact; none is privately owned. If the original reservation land is not restored, however, other public lands in Beaver County may be candidates for reservation restoration and conflicts over land withdrawal for the OB site could arise.

Construction of an OB at the Milford site would not directly impact any Indian reservations or colonies. Indirect social and economic impacts on Native Americans are expected because of the proximity of Milford to Utah towns in which Southern Paiutes are currently living. The Cedar City Colony, 50 mi to the south, consists of ten acres of land owned by the Mormon Church. There are 100 enrolled members of the band, 75 of whom live in Cedar City, though not necessarily at the Colony itself. Additionally, most of the Indian Peaks band moved to Cedar City following termination from federal trusteeship, and the subsequent loss of their land. The Kanosh and Koosharem bands, living in the towns of Kanosh and Richfield, respectively, are less than 60 mi from Milford and the Shivwits reservation, and the town of St. George where most of the 290 enrolled members of the Shivwits band live, are about 100 miles south of Milford.

The Southern Paiutes are an economically-depressed Native American tribe. Colony lands in Utah are residential; there is no agriculture or other economic base for most of the bands. Unemployment is high; most employment is seasonal and/or temporary wage labor. The income derived from this work is minimal and the average per capita income is under \$700/year. Given these economic circumstances, a large-scale construction project with an estimated 400, 800, and 1,050 civilian jobs for the first three years would be expected to be very attractive to an economically-deprived segment of the population. Then with employment projections of 500, 700, 1,500, 2,000 and 2,400 for the succeeding five years, the Milford area would probably become the focus of attention for unemployed Native Americans.

Estimates of the numbers of Native Americans who might migrate into the area in search of employment are hampered by the tentative estimates of Southern Paiutes in the region. Prior to the April 1980 reinstatement of the Utah Southern Paiutes, there were 545 enrolled members of the five bands (and an additional 294 Southern Paiutes at the Las Vegas Colony and Moapa reservation in Nevada). With reinstatement, however, the "final membership role is declared open" (Public Law 96-227 Section 4, pg. 318) and individuals who can show that: (a) they were enrolled

in a band in 1954 or were on the 1968 rolls drawn up for funds disposition, or (b) were entitled to be either on the 1954 or 1968 rolls but were not listed, and (c) are a descendent of an individual qualifying in (a) or (b) above and are one-quarter Paiute "shall be a member of the tribe" (Public Law 96-227 Section 4, pg. 318). The number of Paiutes who fall into these categories is not yet known, but it is estimated that the population of Utah Southern Paiutes will be at least double that currently enrolled and the labor force is expected to increase substantially.

None of the Native American communities in close proximity to the Milford site (Cedar City, Kanosh & Richfield Colonies) would be expected to absorb the increased population, the family and other relatives of workers and would-be workers. It would render the housing facilities inadequate, and, since most of the newcomers would not be enrolled members of the local band, Kanosh, Koosharem, or Cedar City, federal money for reservation housing would not be provided.

Site-specific information on the socioeconomic environment of the Utah Southern Paiutes collected by a field research team is currently being analyzed to refine impact projections.

#### **EFFECTS ON ARCHAEOLOGICAL AND HISTORICAL RESOURCES (2.1.13)**

Intensive field surveys have not been conducted at the proposed Milford OB site nor in the suitability zone surrounding the proposed OB. Therefore, direct and indirect impacts to cultural resources cannot be fully assessed at this time. The existing data base suggests that habitation sites are numerous along the entire Beaver River drainage and apparently occur with somewhat greater frequency to the north of Milford. About 90 percent of the recorded habitation sites occur along the Beaver River and its tributaries. Limited activity sites tend to occur most often on the gently sloping areas of the upper and lower bajada. These sites comprise nearly 80 percent of the known sites in the region. In the region within a 20 mile radius of the Milford OB, approximately 570 mi<sup>2</sup> representing 45 percent of the area is considered to be of moderate to high potential sensitivity.

As illustrated, the Milford OB will directly impact approximately 1 mi<sup>2</sup> of high sensitivity area in the vicinity of springs and about 1 mi<sup>2</sup> of the historic mining area of Shauntie near Topache Peak. The remaining residential and OB area situated in the foothills and on upper bajada will impact 6 mi<sup>2</sup> of moderate sensitivity area, and the airfield will impact an additional 2 mi<sup>2</sup> of probable low sensitivity area on the lower bajada. Until intensive surveys have been completed, it cannot be assumed that low site density will occur throughout the low sensitivity zone; however, it is likely that fewer impacts will occur to cultural resources if the residential areas can be moved to the south onto the lower bajada.

Indirect impacts are likely to be far greater than direct impacts to cultural resources from OB construction. M-X related population growth during the peak construction period is expected to reach nearly 18,000 which represents an increase of 336 percent in Beaver County in 1986, and OB population is expected to number about 9,100 in 1989. By 1994, the population on-base will number nearly 8,800, and growth in the county will stabilize at 237 percent over projected growth without M-X. This growth coupled with much increased accessibility provided by the M-X road network will increase indirect impacts of vandalism and recreational pursuits proportionately. Impacts from increased population, accessibility, and site sensitivity due to development of the Milford OB are summarized in Chapter 2.

National Register sites subject to potential indirect impacts include the Wildhorse Canyon Obsidian Quarry and Parowan Gap petroglyphs. Other highly sensitive areas include the entire Beaver River drainage, Fremont sites in the Parowan Valley and other valleys to the south and east, and the National Forest areas to the east and south.

Growth-related impacts in nearby communities of Milford, Minersville, Beaver, and smaller communities will be substantial. Potential impacts include neglect and decline of architecturally and historically significant properties, incongruous new construction, and demolition of significant structures.

Because direct and indirect impacts to National Register and eligible properties are anticipated, a Programmatic Memorandum of Agreement has been developed between the Advisory Council on Historic Preservation, the Air Force, and other concerned agencies. This PMOA outlines a program which, if implemented, will avoid or satisfactorily mitigate adverse effects on historic and cultural properties.

## **2.2 NATURAL ENVIRONMENT**

### **EFFECTS ON VEGETATION (2.2.1)**

#### **Vegetation**

The Milford site would be used for the first operating base for Alternatives 5 and 6, and the second operating base for the Proposed Action. A general discussion of impacts to native vegetation that would result from use of the Milford site is given in Chapter 2, in the section on native vegetation.

A potentially serious impact not discussed in detail is the invasion of disturbed rangeland by the toxic weed halogeton (*Halogeton glomeratus*) (Young et al., 1975). The effects of halogeton invasion are discussed in ETR-14.

Another significant potential impact is the loss of riparian woodland trees from along the banks of the Beaver River, and marsh vegetation from the Beaver Bottoms and other desert marsh areas. Moisture-requiring species that provide valuable forage and wildlife habitat would be lost if groundwater overdrafting results in lowered, more intermittent streamflow, and water loss in marsh areas.

### **EFFECTS ON WILDLIFE (2.2.2)**

The location of the base is directly within pronghorn range and may prevent or inhibit pronghorn movement between Wah Wah Valley and the Escalante Desert. This would have negative consequences on herd health and population stability. Two key habitat areas are located within the OB suitability zone. Construction of the OB and subsequent human activity in the OB vicinity would substantially affect pronghorn in these key habitats. Pronghorn will also be vulnerable to illegal shooting and disturbances at their waterholes and off-road vehicle activity in the area may prevent pronghorn from using part of their range because of noise and visual effects.

Because of their low density in this part of Utah, mule deer are not expected to be greatly affected. Some poaching may occur in areas of higher mule deer densities. Sage grouse, which occur to the east near Minersville, would likely receive more hunting pressure. This and ORV activity in this area could have significant negative effects on sage grouse.

Both pronghorn and sage grouse are regionally significant wildlife species with a high likelihood of being significantly impacted by M-X deployment. Therefore, a detailed impact analysis was conducted on these two species, with the results presented in Chapter 2.

The Milford OB would have a moderate impact upon sage grouse when the indirect effects are combined with the indirect effects from an OB at Coyote Spring Valley, under the Proposed Action. However, when the indirect effects from the Milford OB are combined with those effects from OB's under Alternative 5 and 6 sage grouse would be significantly impacted. Mitigations are discussed in ETR-15.

### **EFFECTS ON AQUATIC SPECIES (2.2.3)**

The proposed project facilities are downstream of Minersville Reservoir. No direct impacts of construction or operation would be expected to affect that habitat. Portions of the Beaver River are downstream of project features. However, few of the OB or other project facilities are proposed to cross or parallel the Beaver River. (All principal portions of the project are west of the Beaver River.) Indirect impacts, resulting from increased local population, would be expected to impact both habitats. Increased fishing pressure would reduce fish populations so as to require modification in management practices. Habitat modification, through man's recreation, would also adversely impact these habitats.

Management practices would be expected to require modification to maintain acceptable fishing success.

### **EFFECTS ON PROTECTED SPECIES (2.2.4)**

#### **Protected Terrestrial Animals**

A transplant population of Utah prairie dogs are located approximately 33 mi (55 km) southwest of Milford in the southern end of Pine Valley. Two other population centers exist 15-25 mi to the east and south in Parowan Valley and near Cedar City. The problems associated with people recreating in the southern end of Pine Valley and in the Parowan Valley area are the same as discussed for the Beryl OB suitability envelope. Impact significance analysis for this species is included in ETR-17. This analysis indicated that the Milford OB would have a moderate indirect effects upon prairie dog populations in the Parowan Valley and near Cedar City, Utah. These effects can likely be reduced by employing mitigations such as restriction of ORV use by fencing, and an education program to inform people in the vicinity of the significance of this species. Further mitigations are discussed in ETR-17. The indirect effects model, described in ETR-30, was used to estimate the magnitude of the indirect effects expected from the Milford OB.

Bald eagles in the area near Minersville Lake State Park and those in the Wah Wah Valley may react in a manner similar to that described for populations near Ely.

Bald eagles may not tolerate disturbance near their traditional roosts which are not presently near humans and may move to other traditional sites which are not visited by people (Stalmaster, 1976), although they may become habituated after several years.

#### **Protected and Recommended-Protected Aquatic Species**

No direct impacts of locating an OB in the Milford area are expected, since no protected or recommended-protected aquatic biota occur in the OB or surrounding valleys. The nearest sensitive species occurs 50 miles SSW in Condor Canyon, Nevada. This is the recommended-protected Big Spring spinedace. No other protected or recommended protected fish or aquatic invertebrates occur closer than about 100 miles. Indirect impacts from this OB are expected, and would be most likely to occur in the mountains and canyonlands to the east and south where the scenery is more appealing. A detailed impact discussion of alternatives involving this OB and potential mitigations are presented in ETR-16 and in the technical report on protected species, ETR-17.

#### **Protected Rare Plants**

Construction of the Milford OB is not expected to directly impact rare plants. The suitability zone does not contain any known rare plant locations.

The San Francisco Mountains, north of the proposed operating base, appear to be an endemic center of rare plants. The inch-high fleabane (Erigeron uncialis var. conjugans), the dwarf gum-weed machaeranthera (Machaeranthera grindelioides var. depressa), and two newly discovered species, Ostler peppergrass (Lepidium ostleri) and Frisco clover (Trifolium andersonii var. friscanum), occur here, among scattered pinyon and juniper trees (Welsh, 1980; Atwood, 1980). These rare plant species are not expected to be affected by clearing activities involved in construction but they may be affected by ORV use or an increase in recreational activities.

Two plant species which are recommended for threatened status are found just north of Milford. They are the dwarf beard-tongue (Penstemon nanus) and the tufted globe mallow (Sphaeralcea caespitosa). Habitat for these species could be affected as the support community grows in response to the population influx. The net population increase due to M-X in Beaver County is projected to be in the range of 150-250 percent.

#### **EFFECTS ON WILDERNESS AND SIGNIFICANT NATURAL AREAS (2.2.5)**

Analysis of OB impacts to wilderness are treated in Chapter 2 and in ETR-18. Discussion here is limited to significant natural areas. Figure 2.2.5-1 shows the OB location for Milford. No key natural areas will be directly affected by the base suitability envelope.

Potential impacts to significant natural areas would be due to the recreational activities of the in-migrants using the indirect effects analysis as discussed in ETR-18. Areas likely to receive increased use include the following: Wheeler Peak, Lehman Caves, Cedar Breaks, Bryce Canyon, and Zion National Park.

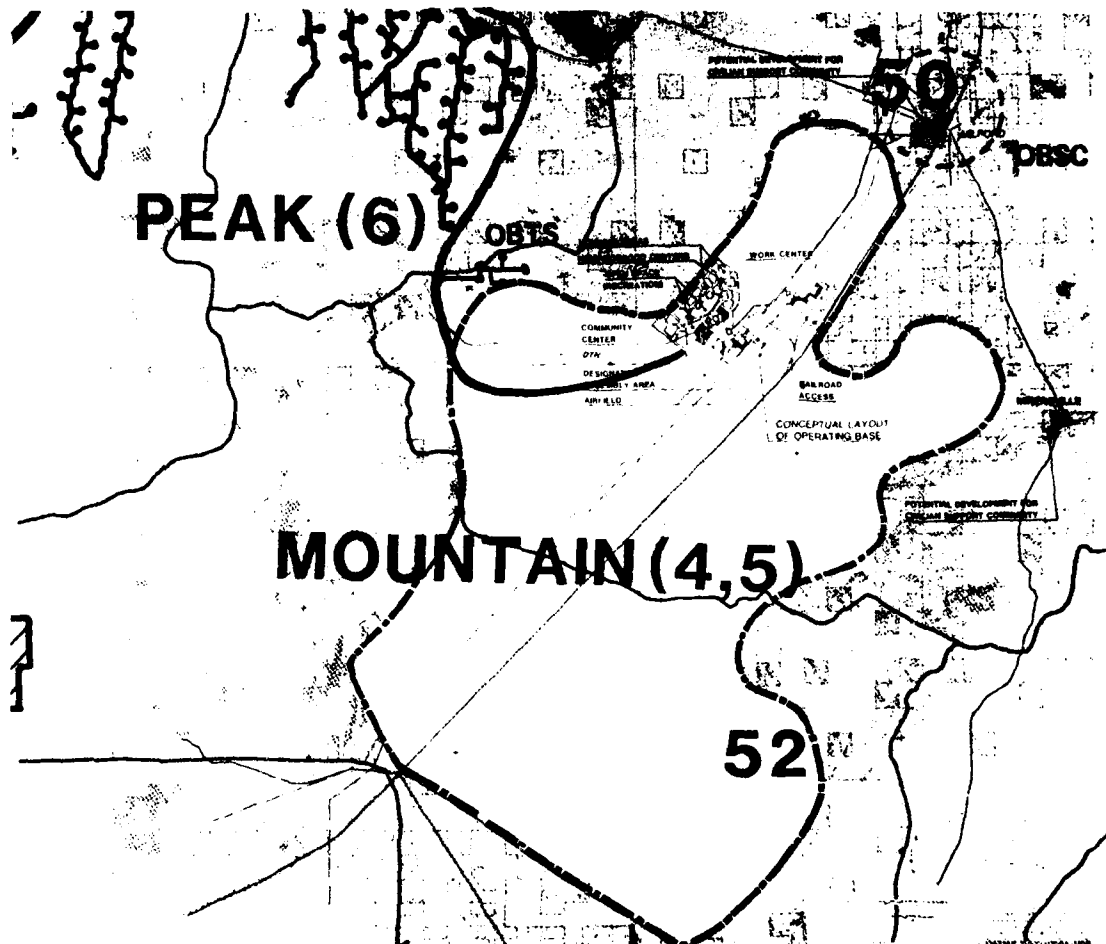


Figure 2.2.5-1. Milford suitability envelope vs significant natural areas.

## **EFFECTS ON SURFACE WATERS (2.2.6)**

### **Availability**

Effects on surface water caused by an M-X operating base will depend on the method used for acquiring surface water for the project. A primary constraint on the acquisition of water is that no new appropriations are being approved by the Utah State Engineer's Office. This office controls water appropriations by adjudication and is under state law to ensure the preservation of an available water supply.

### **Water Quality**

Construction activities will have effects upon the quality of surface water. Most of these effects can be minimized through proper construction methods.

General clearing, leveling, and earth moving activities will be responsible for the disturbance of the soil system. The exposed land surfaces, in combination with concentrated runoff during periods of rainfall, will contribute to increased erosion rates. Undesirable effects of accelerated erosion include soil loss and water quality degradation of nearby drainage systems. In steep terrain, erosion as a consequence of excavation can be a substantial problem. However, based on the nearby flat-lying lands, the potential of erosion as a consequence of earth moving and channeling activities is expected to be reduced.

The M-X facilities will lead to channelization in some areas and rechannelization in others. In channeling activities, erosion and sedimentation processes which commonly occur are the same as for natural sources. These are: (a) degradation of minor drainage ways, (b) sheet and hill erosion, (c) gully erosion, (d) flood-plain scour, (e) stream bed degradation, and (f) stream bank scour. Most of these methods of erosion may be applied to a soil spoil pile through the channeling process. In the process, the sediment produced may be transported in small streams as wash load and bed load.

To the soil spoil piles, the change in the physical and chemical characteristics of the trace metals varies by the influence of weather, the method of piling, the slope of piles, the nature of the material, and the particle size distribution. Particle size of soil spoil pile varies from large boulders to fine sands. No generalization can be made concerning the typical particle size to be expected in an overburden spoil pile.

Channeling disturbance may divert chemically polluted surface water to other localities where the surface and groundwaters are free from pollution. Generally, removal or disturbance of soils will enhance the oxidation processes of trace elements due to increased air entrapment and porosity. Some trace elements become more soluble in the oxidized state and leach through the soil faster than normal. On the surface spoil soil forms a permeable crust or layer which also increases hydrolic and aeolian erosion. In filling processes, material used for stabilization, such as rock or soil transported from nearby areas, might introduce chemically and physically different soil characteristics which provide favorable conditions for chemical reactions with local minerals and produce environmentally hazardous chemical components as end products and/or by-products of these reactions.

Substances used for road stabilization and dust control could cause a degradation of water quality should they be allowed to enter the surface waters. These will mainly be oils or cements but proper construction methodology can prevent this from occurring. The lessening of the water quality could have serious effects on the aquatic biota and could eventually lead to the contamination of the groundwater supply. Use of the dust control palliative should be avoided on all areas that should be revegetated. The effects of the palliation on any surface besides those of the roads are unknown but suspect.

The effects of increased access upon the surface water quality is difficult to assess at this time but could be detrimental unless some controls are applied. M-X activities will create personnel and activities associated with M-X construction and operation will generate water-borne wastes. The discharge of these wastes after treatment could have an effect upon the water quality of the surface resources. Possible effects upon the surface water could be a reduction in dissolved oxygen present, an increase in nutrients, or the introduction of toxic substances. All these can be avoided by the use of present technology in designing and constructing the waste treatment system.

Discharge of treated effluent may create new surface water resources. The water could provide a positive impact by creating new habitats or providing a water source for agriculture.

#### **EFFECTS ON GROUNDWATER RESOURCES (2.2.7)**

M-X operating base (OB) must be located in Utah about 15 miles southwest from Milford. The OB would include an airfield, support facilities, a railroad and road network, and necessary additional facilities consistent with the use of the base as either an OB I or as an OB II under either a split or full deployment basing model. The operating base and support facilities would occupy 4,000 to 6,000 acres.

##### **Milford Site**

This site lies within an area designated a critical groundwater basin by the Utah State Engineer. The areas inhabitants are currently mining its groundwater resources. The estimated perennial yield of 58,000 acre-ft per year (Fugro, 1980) is less than the estimated groundwater consumption rate of 65,000 acre-ft per year (Gates, et. al., 1978). This groundwater mining is reducing the groundwater availability by removing water from storage and probably reducing the storage capacity by permanent dewatering (compaction) of some areas. As substantial amounts of water are removed from storage, water quality will also be degraded (Mower and Cordova, 1974).

Potential Impacts. Since irrigated agriculture represents about 98 percent of the current water use (Gates, et. al., 1978), M-X impacts would be primarily felt by agriculture. Water table declines caused by M-X withdrawals would appear as impacts of increased pumping costs.

An M-X operating base at the Milford site would need 7,000 acre-ft per year for 30 years. This withdrawal would increase the current aquifer depletion rate (current use above perennial yield amounts to 7,000 acre-ft per year by 50 percent, a very significant impact).



When compared with the other alternative sites in Nevada/Utah the relative potential for impacts at Milford would be moderate. This rating is due mostly to the large M-X effect on the aquifer depletion rate. Significant impact potential exists because the groundwater resource is currently under stress and the addition of M-X demands would significantly increase that stress.

M-X water requirements, combined with present usage rates, exceed perennial yield, and Utah State Engineer's office will permit no addition groundwater withdrawals appropriations in the Milford area. M-X withdrawals for construction would represent an amount equal to 5.3 percent of current water usage and 5.9 percent of perennial yield; annual withdrawals for M-X operations would represent an amount equal to 6.5 percent of current usage and 7.2 percent of perennial yield. The impact on groundwater levels, underflow, or groundwater storage would be minor. In general, springs are elevated above the valley-fill deposits, and withdrawals would not be expected to impact spring flow. The increase in surface runoff during major thunderstorms would be minimal; local increases in sheet and stream-channel erosion may occur. Construction activities could degrade surface-water quality during thunderstorms, but not significant impact on groundwater quality would be expected.

#### **Mitigation Measures**

Existing groundwater rights could be purchased or leased. Potential well sites would be carefully selected to avoid interference with existing wells, and an experience hydrogeologist would supervise well construction. A numerical model of the basin would be used to project potential impacts on local users, and the extraction program would be altered accordingly. The aquifer would be tested following well construction, and the effects of withdrawals on local groundwater would be monitored. A local surface drainage system and erosion control structures would be constructed to safely convey the runoff from the M-X operating base site to a regional drainage facility. Temporary retarding ponds would be built to reduce peak flows and to desilt the runoff to avoid downstream deposition. After completion of the M-X project, the water supply system may be made available for local use.

#### **EFFECTS ON AIR QUALITY (2.2.8)**

##### **Construction**

Figure 5.3-1 in ETR-13 presents the PAL model results for two emission levels, unmitigated and mitigated. The mitigated case assumes application of enough dust control treatment to reduce fugitive dust by 50 percent. This modeling indicates that the OB site and vicinity, including Beryl, will be affected by dust. Due to model limitations, the predicted dust concentrations are only a rough approximation.

##### **Operation**

Due to the topographical and meteorological similarities between the Beryl and Milford sites the dispersion modeling results obtained for Beryl and Vicinity (section 5.1.3 in ETR-13) adequately describe potential air quality impacts due to an equivalent increase in activity in Milford. Transport of pollutants from the OB to

the support community is not predicted to occur in the Beryl region. Transport of pollutants from the Milford OB to the community of Milford is even less likely because of the greater distance between the Milford OB and the community of Milford.

Peak CO concentrations at the OB site are predicted to occur at the location where highest vehicular traffic is expected; at the entrance to the OB. 2.3 ppm is the highest predicted CO concentration at the OB. The peak concentration occurs at 9:00 a.m. when winds are light and stable atmospheric conditions occur, resulting in poor pollutant dispersion. The highest concentration predicted (2.3 ppm) is 7 percent of the hourly CO NAAQS. The peak NO<sub>x</sub> concentration, 0.18 ppm, occurs at the same time and location. There is no NO<sub>x</sub> hourly standard but the annual standard is 0.05 ppm. 0.18 ppm is larger than the annual average NO<sub>x</sub> NAAQS. The peak concentration will only occur during worst-case atmospheric conditions and during peak emission periods. Therefore, annual average concentrations at peak locations are expected to be a fraction of the annual NAAQS.

Other pollutants with NAAQS are total suspended particulates, hydrocarbons, sulfur oxides, and lead. Emissions for these pollutants and resulting effects during operation are expected to be insignificant at the operating base due to the M-X. The construction of the OB will result in significant particulate levels for a temporary period. Particulate levels during construction of the OB will be similar to the effects predicted for the construction of roads and shelters in the deployment area where localized particulate levels will be elevated.

#### **EFFECTS ON MINING AND GEOLOGY (2.2.9)**

The Milford OB site is located near the south end of the Star Range. Further north in the Star Range is the Star Mining district. There are many patented and unpatented claims throughout the area. The OB site avoids the largest concentrations of claims. The mineral occurrence is associated with intrusive rocks. A careful geologic assessment of the area will be required to ensure that the OB site does not conflict with developable mineral deposits.

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